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Improving ADOLESCENT LITERACY

Content Area Strategies at Work

Douglas Fisher
Nancy Frey

Fifth Edition

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Douglas Fisher
San Diego State University

Nancy Frey
San Diego State University

Pearson

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Preface

Literacy is the currency of learning, and literacy opens the doors to all other learning, which is why every teacher needs to consider the ways in which reading, writing, speaking, and listening can be addressed in their classrooms. Unfortunately, some students arrive in our middle and high school classrooms underprepared for the demands of their coursework and lacking the literacy skills to succeed academically. In addition to the underprepared students who are enrolled in your classes, it is important to recognize that all students learn through language and that reading, writing, and thinking must be developed in every middle school and secondary classroom. If this is left solely to the English teachers, students will fail to develop the skills necessary to comprehend or produce complex texts in their subject area classes. We believe that it's you, the middle school or secondary teacher, who can make a difference in student success. For this reason, we offer this concise text with instructional routines that will allow you to develop the literacy skills students need to comprehend course content, no matter what content area or elective you teach.

New to This Edition

The past two decades have been exciting for those interested in adolescent literacy. This field emerged in the 1970s with the work of Hal Herber and his associates, who drew attention to content area reading and writing. In its early days, content area literacy was conceived as an approach that infused specific strategies into instruction whenever possible. What has become clear in this decade is that adolescent literacy consist of both a set of generic approaches used across disciplines and the specific and specialized approaches used within a discipline. This edition seeks to incorporate this stance. In this fifth edition of *Improving Adolescent Literacy*, we provide new classroom examples from our colleagues across the disciplines as well as new instructional routines that have been researched and validated since the publication of the last edition. In addition, we have reorganized the text to reflect the knowledge that has been generated over the past four decades.

Text Organization and New Features for Each Chapter

This book is organized into 10 chapters. In the first chapter, we introduce critical goals for adolescent literacy and a rationale for the involvement of content area teachers in improving adolescents' access to literacy. New to this chapter is a discussion about the differences between content area literacy and disciplinary literacy, both of which are important in students' development. We also now include information about the design of learning experiences through the gradual release of responsibility framework.

In Chapter 2, we turn our attention to building and activating background knowledge. This was not included in the fourth edition of this book, but since then it has re-emerged as a topic worthy of attention. This chapter introduces readers to a learning model that begins and ends with knowledge, specifically creation, modification, and use of knowledge. As with Chapters 3 through 9, we provide examples of the topic, in this case building and activating background knowledge, in English, Science,

Social Studies, Mathematics, and Electives classes. In many cases these instructional strategies can be used in other subject areas, so we caution readers to avoid skipping examples that are not consistent with what they teach. In other cases, the examples are discipline-specific and build disciplinary literacy skills.

In Chapter 3 we focus on vocabulary development. In this chapter, we have updated the language used to describe the types of vocabulary students need to learn as well as some of the instructional routines useful in facilitating word learning. Vocabulary remains an important part of students' learning across the content because technical words define the discipline.

Chapter 4 is a familiar chapter to readers of previous editions of this book. We have updated the research on read alouds, shared readings, and close readings, but these tools have been the staple of teaching for decades. Having said that, it's important to recognize that the focus of the modeling teachers provide for students in middle and high school classes during read alouds and shared readings should incorporate disciplinary ways of reading and writing. We have clarified this important distinction in the chapter.

Chapter 5 turns our collective attention to questioning. Questioning has always been a part of this book because it is one of the tools that teachers have at their disposal to check for understanding. Poorly constructed questions are a waste of time and fail to inform the teacher about students' thinking and understanding, whereas strong questions guide students' thinking and provide data for teachers about their next steps instructionally. This chapter has been revised to include text-dependent questions that require students to draw information from the texts they have read.

In Chapter 6, we focus on collaborative conversations and peer-to-peer learning. Some of this information was integrated into different chapters in the last edition, but this fifth edition devotes an entire chapter to this type of learning. As a profession, we have learned a lot about the value of collaborative conversations in the classroom as well as how to structure tasks that encourage collaboration and discussion. The new information in this chapter provides readers with information about group work and productive group work across content areas.

Chapter 7 is another familiar chapter. Graphic organizers and visual ways of representing content have existed for several decades. The research support for these tools is strong. However, we clarify the timing of the use of these tools in this edition and note that students need to have sufficient background knowledge for graphic organizers to be of use. In addition, we have updated the types of tools used in the classroom and included a number of digital tools.

Similarly, Chapter 8 provides time-proven tools in teaching students to take notes. We review a variety of notetaking systems and describe the ways in which these tools can be used in different content area classes. Readers will find much that is familiar in this chapter, as well as updated research information and examples.

Chapter 9 dives into the world of writing. In this chapter, we focus on writing to learn rather than process writing, which is more common in the English classroom. Updates to this chapter include the text types that students must produce to be successful in college and the workplace. We also explore the ways in which teachers can construct writing prompts that scaffold students' learning.

The final chapter of this book focuses on assessments, both formative and summative uses of tools to determine students' learning. This is a new chapter for the fifth edition, and it includes a wide range of strategies for checking for understanding as well as information about what to do with the assessment data once it has been

collected. Using student data to plan instruction ensures that teachers are more responsive to the individual needs in their classrooms and promises to result in more students learning at higher levels.

We hope that the new organization and additions to this book will serve you well. Our goal is to demonstrate that "literacy strategies" are useful across subject areas, and to encourage teachers to think about the ways in which they can ensure that their students learn the language of the discipline they teach. When students do, in fact, master the language of a discipline, they move from apprentice to increasing mastery and learn how to become proficient in the content area.

Acknowledgments

We have had the opportunity to learn alongside a number of skilled teachers as they delivered their content in ways that have increased their students' literacy learning. We thank all of the teachers who invited us in and provided us with detailed information about their practice. We are especially thankful for the teachers at Health Sciences High & Middle College who allow us to engage with them in teaching and learning. The teachers at HSHMC are among the best in the world, and they make a tremendous difference in the lives of students.

We would also like to thank the reviewers who offered their thoughtful comments as this work progressed. Their feedback made this a better book, and we thank them for that: Alysia J. Backman, Literacy Coach, South Burlington High School; Margaret Berg, University of Northern Colorado; John Bishop, University of Southern Mississippi; Glenda Moss, University of North Texas at Dallas; and Michelle L. Page, University of Minnesota-Morris. Previous edition reviewers include Linda Cole, The Barrie School; Karen Ford, Ball State University; Gay Ivey, James Madison University; Courtney Kelly, Manhattanville College; Margot Kinberg, National University; Valerie Kinloch, The Ohio State University; and Scott R. Popplewell, Ball State University.

Douglas Fisher & Nancy Frey

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Chapter 1
Ensuring All Students Read, Write, Think, and Learn

Learning Objectives

1.1 Identify the role that language plays in learning.

1.2 Describe ways in which struggling readers can engage in learning in content area classes.

1.3 Discuss the shared responsibility for literacy development among all teachers.

1.4 Compare and contrast disciplinary and content area literacy.

1.5 Summarize the concepts of reading comprehension and intentional instruction.

As your eyes pass over these little squiggle marks, consider the amazing feat you're accomplishing. Small ink marks are being transferred from the page or screen, through your eyes, to your brain. Once there, your brain makes a series of connections such that you make sense of the ideas on the page. It's amazing really, and it's how we learn. Humans learn through language. When we read, write, speak, listen, and view, we learn. It's really that simple. It's why we wrote this book. We want to ensure that middle and high school students have opportunities to use language to learn the amazing content introduced to them in school. Whether that content be in the form of a 15th-century sonnet, an experiment in physics, the analysis of a jazz composition, or perfecting a free throw, language is involved in learning.

As a case in point, let's venture into a history classroom. As you read about Ms. Johnson's class, think about the reading, writing, speaking, listening, and viewing that students do, all in service of learning history.

The students in this 11th-grade U.S. History class are studying the rise of industrialization and immigration at the turn of the 20th century. They attend an urban school where 100% of the students qualify for free lunch and 65% are English learners. The students have been studying industrialization and immigration for several weeks. These dual trends intersected tragically in the sinking of RMS Titanic *in 1912. Christine Johnson wants students to apply their knowledge of the era to a specific event—the* Titanic *tragedy. She*

uses documentary film clips to help students initially understand the event. After discussion, students work in collaborative groups to read excerpts of informational articles written nearly a century apart. Ms. Johnson has drawn from newspaper accounts from the era, as well as modern critiques of the event and an article on the 1985 recovery effort.

Ms. Johnson asks the class, "After seeing the video presentation of the Titanic *accident, what are your thoughts about this tragedy? Write all you know. You have 5 minutes." Time is called and the students share their impressions. They begin to brainstorm prior knowledge using the What do you Know, What do you Want to know, and What did you Learn (KWL) strategy to focus on the assigned text passages. Ms. Johnson follows with the question, "What would you like to know about the* Titanic*?" She asks the students to share their questions as she writes some of them on the whiteboard.*

Anna reads from her writing. "Why didn't they listen to the warnings? Why didn't they look hard enough for an iceberg?"

Isaac asks, "What did they do to the ship that made them think that it was unsinkable? How long does it take an iceberg to disappear?"

"I want to know, why didn't they have enough life boats for everyone?" asks Cesar.

Marco adds, "Who were some of the people in first class? I would like to know about them in more detail."

Latasha wonders, "Who were the survivors and are they still alive? Are they scared to go on trips in a boat?"

"Whose fault was it?" asks Josie.

Ms. Johnson identifies each question as either at the literal or interpretive level. She challenges the students to extend their thinking as strategic readers and to answer their own questions. Ms. Johnson turns their attention to the learning intention and the success criteria for the lesson. "The learning intention today is to analyze passages from primary and secondary source documents written at the time of the tragedy, and contrast them with more modern accounts. The success criteria are to annotate the passages with this question in mind: How did political, economic and social beliefs of the time contribute to the sinking of the Titanic*? You'll use today's notes to write a more formal document-based analysis (DBA) in class tomorrow."*

Next, Ms. Johnson introduces relevant vocabulary, including steerage, transmit, SOS, *and* dispatch, *all of which appear in the news articles from the era. She has chosen these because she has anticipated that her students will be unfamiliar with these terms because they apply to ship communications used a century ago. She constructs a concept map to visually represent both the definitions and relationships among the target words. She also reviews the organization of the texts they are about to read. "We will read and question the text, so that we can build an initial understanding of the human experience in this tragic event." She adds, "Newspaper text is often organized in a temporal sequence that tells a chronological description of events. The main purpose was to report what had happened to its readers." Two other articles analyze the event from the research conducted on the wreckage site. She explains that these texts are organized for cause and effect. "These articles were written more than 70 years later. Expect more analysis and interpretation of the disaster."*

She then draws their attention back to the major analytic question they are exploring: the political, social, and economic forces that impacted this event. "We're reading as historians read, with an analytic frame. We source the information, look for corroboration, and most importantly, contextualize. We know a lot about the era. We're examining these reports to illuminate our analysis."

Ms. Johnson reads aloud the first news report from April 15, 1912, the night after the sinking. "It's titled, 'Save Our Souls' Was Titanic's *Last Appeal." She encourages her students to follow the way she constructs meaning using the three central Directed Reading-Thinking Activity (DR-TA) questions:* What do I think about this? Why do I think so? How I can prove it? *She guides the students with her questions and think-aloud responses through the annotation process. "I noticed that in this first report, it mostly concerned itself with first class passengers. No mention of those in steerage. I'm thinking about the relative lack of concern for immigrants that might have been traveling here. But I also know that information about any of them would have been scarce at the time of this account. I'm wondering about whether they will appear in more modern accounts." This directed questioning guides the students for their independent reading and leads them toward higher level thinking.*

After her guided preparation, the students participate in small group collaborative reading and discussion of the passages. Ms. Johnson monitors the students as they read to achieve individual levels of understanding, and examines their annotations to gauge their learning.

But What About "Struggling Readers"?

It is essential to note that not all of the students in Ms. Johnson's class are reading at or near grade level. Her class is a heterogeneous mix of advanced readers, English learners who are developing skills in the language, students reading several years below grade-level expectations, and some with disabilities. But students who are not yet performing at expected levels are sometimes referred to collectively as "struggling readers," a term with which we take exception, and yet we understand that it conveys information about a group of students who need additional support. "Struggling" is situational; it is not part of the learners' identity. We are not suggesting that you ignore specific needs—in fact, quite the opposite. Effective teachers create the conditions needed for all students to succeed. Ms. Johnson has done this by:

- Building background knowledge
- Linking current learning to prior knowledge
- Explicitly stating learning intentions and success criteria
- Seeking relevance by discussing student impressions and questions
- Modeling her thinking and the processes she uses to critically analyze a passage
- Using small-group heterogeneous grouping so peers can support one another
- Monitoring individual progress in order to render more specific supports

Having read about the students' experiences in Ms. Johnson's class, think about how their understanding would be different—compromised even—had they simply been told the information, rather than experience it through all of the various aspects of language. Listening is one aspect of language, but not the only one. If students are to reach high levels of achievement and understanding, both in terms of literacy and content knowledge, they have to read, write, speak, listen, and view on a daily basis. And that's what this book is about. Over the course of the book, we will introduce you to the various ways that all students—average, advanced, English learners, students with disabilities, and those not yet performing at expected levels—can use language to comprehend your content. The following boxed feature provides some tech tools that can help struggling readers.

Tech Tools for Struggling Readers

1. **Rewordify.** One of the most innovative websites to be developed in the last several years, Rewordify.com is a free online tool that helps improve students' reading comprehension in multiple ways. First, a user pastes or imports text into a text box on the site. Rewordify then analyzes this text, looking for words and phrases that may be difficult to understand. Once the site locates difficult or problematic language, it replaces it with simpler words to aid students' understanding.
2. **Snap&Read Universal.** Created for students and teachers, Snap&Read Universal is a Google Chrome extension that reads language aloud (including text on Flash-based websites that typically can't be copied and pasted) using integrated text-to-speech with synchronized highlighting. To aid in reading comprehension, Snap&Read allows students to use a text-leveling tool similar to the one found on Rewordify.com. Students can select text that they have a hard time understanding, and the Web browser extension will identify and replace difficult words with simpler ones. The level of linguistic complexity can be adjusted in the Options tab.
3. **Newsela.** The idea behind Newsela is simple but powerful, and it can have a big impact on developing the reading comprehension of diverse learners. Newsela is a website that publishes current events articles each day on a variety of topics pertaining to most school subjects. Every article has five versions, each written for students at different reading levels. After a student reads the version that matches his skill level, he can take corresponding quizzes to test his knowledge.
4. **Immersion Reading.** Based on the idea that multisensory activities provide deeper and longer-lasting learning, Immersion Reading is an e-book technology that combines recorded audiobooks with synchronized highlighting of electronic text. The result of a partnership between Amazon.com and Audible.com, Immersion Reading allows students to read books with their eyes and ears at the same time, leading to better comprehension and retention of subject matter. Since it does not rely on synthesized text-to-speech and instead uses the vocal performance of a professional actor or broadcaster, Immersion Reading makes auditory reinforcement of written text a more authentic multisensory experience.
5. **Inspiration.** Another multisensory strategy for improving reading comprehension involves electronic graphic organizers, and Inspiration Software provides one of the best platforms for accomplishing this task. Available for both desktop computers and iOS devices, Inspiration allows students to create visual representations of the characters, themes, and plot summaries of works of fiction. It also lets them visually map the details of textbook chapters and current events articles. Any language that is included can be read aloud with text-to-speech technology. In addition, users can add links to Web-based articles and videos to provide supporting materials.

SOURCE: https://www.noodle.com/articles/5-tech-tools-to-aid-your-reading-comprehension

Why Can't the English Teacher Teach This Stuff?

If you are not an English teacher, you might be asking yourself why the English department can't just take care of this instructional need. It's a good question. After all, English teachers work with language extensively. But that's not the only place where students need to use language. As we saw in Ms. Johnson's classroom, language is used throughout the school day. Reading, writing, speaking, listening, and viewing—those happen regularly in every course. But having said that, the types of texts that students read and compose differ across content areas. In other words, reading like a scientist isn't the same as reading as a historian or musician.

State content standards developed in the last decade put a high value on informational texts. The National Assessment for Educational Progress (NAEP), sometimes called "the nation's report card" recommends that by the end of high school, 70% of the texts

that students are reading—print and digital— are informational in nature. Yet informational texts are more difficult for students, even those at or above grade level, as measured by their ability to recall and retell (National Center for Educational Statistics, 2001). Romero, Paris, and Brem (2005) found that this difficulty was due to the challenge of monitoring the text globally; that is, students must monitor and integrate ideas that arc over a large amount of cognitive territory.

Students who read and write below grade level are not confined to the English departments of low-performing schools. They comprise a significant portion of the secondary school population nationwide. The NAEP tracks achievement among a representative sampling of students from across the United States. Results of recent NAEP assessments in reading, mathematics, science, engineering, technology, and the arts show limited growth between grades 4 and 8, and virtually no further growth through grade 12. Clearly, if secondary students who struggle to read are to make any gains, then secondary educators must look beyond the English classroom as the place where they will "catch up." Meaningful gains require a coordinated effort across subjects.

As well, English courses are themselves a knowledge domain, and the literary texts used in them have their own unique challenges. Students in middle and high school must read increasingly complex narrative and poetic forms. These works are predominately in the form of novels, plays, and epic poetry, most of which were written decades or centuries before these students were born. The need for background knowledge is high, especially for historical events, and the vocabulary and syntax are often arcane, if not archaic. Knowledge of story elements such as character, setting, and plot will take a reader only so far. Students must recognize complex literary devices such as foreshadowing, anthropomorphization, tone, allegory, paradox, and symbolism. English teachers, faced with their own disciplinary standards, can't solely teach students how to understand texts in other subjects as well. It takes a coordinated effort across all content areas.

Content and Disciplinary Literacies

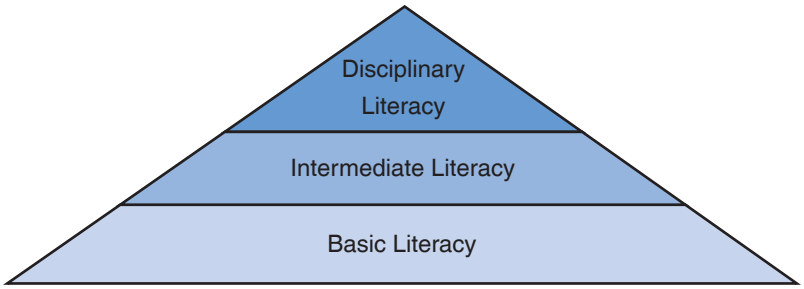
As students use more complex reading materials, their need for additional comprehension strategies increases as well. Although students are typically more comfortable using narrative texts, they are often less adept at using informational reading materials such as textbooks, reference materials, research articles, and historical documents. Lack of instruction using informational texts may explain why even at-grade-level readers in middle school score a full year level lower on comprehension of informational texts when compared to their narrative reading levels (Langer, 1985).

Literacy is integral for building knowledge. This is why most states include literacy standards within the discipline-specific standards of science, history/social studies, mathematics, and technical subjects. Reading, writing, speaking, listening, and viewing are the pathways students utilize to learn concepts. Disciplinary literacy acknowledges that the texts used and the thinking that accompanies it vary according to subject. That is to say, the ways a historian analyzes and reports information is different than the processes used by a mathematician. While middle and high school students are not yet historians and mathematicians, you are apprenticing them in the discipline.

At the same time, students are literacy learners who are developing the attendant skills needed to understand and compose in the subject you teach. Shanahan and Shanahan (2008, 2012) describe the development from elementary through high school (see Figure 1.1). In the earliest grades, basic literacy development, primarily in the form of decoding, happens uniformly in nearly all reading tasks. As students progress

Figure 1.1 Increased specialization in literacy development

SOURCE: Based on Shanahan, T., & Shanahan, C. (2008). Teaching disciplinary literacy to adolescents: Rethinking content-area literacy. *Harvard Educational Review, 78*(1), 40–59.



into upper elementary (grades 2–5), they move to the intermediate literacy, which is marked by the acquisition of generic content area literacy tools. These are skills that can be applied in every subject and include study skills, note taking, use of Greek and Latin roots to figure out vocabulary, and so on. Approaches like these are termed content area literacy because they are remarkably fluid across disciplines and are vital for gaining and expressing knowledge. But generic content area literacy skills alone are not sufficient. As students move into middle and high school, they expand their generic literacy skills and they begin to develop disciplinary literacy. These literacies are specific to the subject and are necessary in order to comprehend and compose knowledge understood within a specific subject.

A discipline-specific approach to literacy in history requires that students be able to critically analyze a primary source document through a process of sourcing the information, looking for corroborating evidence to determine accuracy, and applying the historical context of the time to understand events and actions (Wineburg, Martin, & Monte-Sano, 2011). It's what Ms. Johnson was asking her students to do in the *Titanic* scenario. But these same processes would be wildly out of place in a mathematics classroom. Instead, the emphasis is on translating mathematical representations, evaluating the problem, and reviewing for reasonableness.

Students in middle and high school need both generic and disciplinary literacy in order to progress through their courses. The generic content literacy approaches ensure that students have processes for figuring out unfamiliar vocabulary, for creating and using comprehensible notes for studying, and for locating information in a text. But students must also build their discipline-specific literacies as they master the knowledge base of the subject. In other words, content area literacies are not left behind. Rather, both are utilized in tandem to make meaning and deepen understanding.

Discipline-Specific Elements in Texts

The texts associated with specific subjects have unique elements that distinguish them from other disciplines. In English courses, for example, narrative is the most frequent text type students encounter. Teachers can help students understand the way storytelling devices are used to describe both real and imagined events by providing students with knowledge about how subgenres (e.g., poetry, drama, short stories) are structured.

Students should understand character development, setting, and types of conflict, including human versus self, human versus human, human versus circumstances, and human versus society. In addition, students need to recognize the common structures of literature—introduction, rising action, climax, falling action, and denouement. These structures are not wholly confined to narrative texts in English, however. Students in English read and compose literary critiques, which are interpretations of literature that require the use of rhetorical devices of inductive arguments, especially *ethos*, *pathos*, and *logos* while avoiding fallacies that can undermine the argument. In addition, students read informational articles to build background knowledge about authors, events, and eras.

As you can imagine, these categorization systems do not work in science. Science texts are often organized using introductory thesis paragraphs. The emphasis is on inquiry as students interrogate theoretical constructs, frame questions, form hypotheses, and examine data. Vocabulary is essential to the field of science and is frequently introduced in text through a bolded word and an example. However, students may find this format frustrating because an explicit definition may not be found in the body of the text. Photographs and scientific charts are used to illustrate phenomena and offer more details about the topic discussed in the text. Science texts utilize a higher degree of nominalizations than other subjects. A nominalization is a verb form turned into a noun. For instance, *investigate* is easier to understand than *conducted an investigation.* This also occurs when an adjective is made into a noun, such as when *applicable* is replaced with *applicability*. Academic writing in general and science writing in particular are packed with nominalizations that can trip up even those students reading at expected levels.

On the other hand, history texts rely on a more journalistic style. Journalistic style is common in newspapers—the main ideas are presented first and then explained or explored in subsequent paragraphs. Narrative text may be embedded, particularly in sidebar features about interesting people or events. In addition, primary sources and quotes are often included in these types of texts. Readers can expect that the chapters and headings will be organized by concepts, and this may prove confusing at times. For instance, a chapter titled "Setting Sail for New Lands" is more ambiguous than one that reads "How European Exploration Changed the Americas." Prior knowledge is critical—and often assumed—in many history texts. Gaps in a student's experience or prior knowledge may derail his or her ability to comprehend the passage. Consider the prior knowledge required to understand the following example from a 10th-grade world history textbook:

> The era from the beginning of the Sui Dynasty to the end of the Song Dynasty lasted nearly 700 years. During that period, a mature political system based on principles first put into practice during the Qin and Han Dynasties gradually emerged in China. As in the Han era, China was a monarchy that employed a relatively large bureaucracy. Beyond the capital, government was centered around provinces, districts, and villages. Confucian ideals were the cement that held the system together. (Spielvogel, 2003, p. 105)

Beyond the content directly related to this passage (Chinese dynasties from 581 to 1279), the reader must understand political systems, monarchies, the hierarchical nature of human settlements, Confucian philosophy, and the idiomatic use of the word *cement*. Photographs are more frequently used in historical materials to illustrate important people, places, and events, unlike diagrams in science books that are usually more conceptual in nature. Like all textbooks, history texts rely on a variety of text structures, although cause and effect is dominant within a chronologically arranged format.

Mathematics texts are distinctly different from those encountered in other content areas. Each chapter follows a predictable pattern, usually an introduction of a concept or algorithm, followed by an explanation, an example, and then a problem. The main idea appears in the chapter title or headings and is featured in comparatively short extended text passages. Instead, extensive amounts of symbols and numbers communicate complex concepts. This symbolic language must be translated into actions the mathematician must follow. In addition, unique technical vocabulary such as *Cartesian graph* and *sine* are used. Students, particularly those who are English language learners, are likely to be confused by mathematical words with multiple meanings such as *set*, *function*, and *operation*. The text structure is almost always sequential and structured to explain a procedure.

Although Physical Education, Art, Music, and technical subject classes rely less on traditional textbooks as sources of information, they do exist. And students often read primary source documents in these classes, but their use of these texts may be complicated by the amount of prior knowledge necessary, as well as the amount of discipline-specific vocabulary needed. A positive aspect is that these texts tend to use a great deal of primary source information, including newspaper and magazine articles, and other multimedia in digital forms. Using these materials requires a great deal of visual literacy, which is the ability to think critically about information presented in graphic forms. This type of literacy mirrors the changing modes of information retrieval and interpretation in our society and is increasingly common in informational texts.

A Primer on Reading Comprehension

In education, the term *primer* describes a small book used to teach young children how to read. In this context, we use the term to describe a short introduction to a broader subject. Readers of this book aren't necessarily immersed in the details of reading comprehension, so it's useful to gain an understanding of its chief features as they apply to literacy in middle and high school classrooms. Reading comprehension does not simply happen through lots of reading; it's developed through activities designed to foster deepening understanding of the text. In other words, comprehension is not necessarily "taught" in the sense that it occurs in the mind of the reader. In particular, comprehending readers are purposeful in their reading, and they use strategies to extend their understanding. Reading comprehension is cultivated through conditions that promote understanding, and intentional instruction plays a key role. And here's the good news: You don't need to be a reading specialist to do so. Three conditions are essential for developing reading comprehension:

- Build metacognitive awareness by teaching students what to do before, during, and after the reading.
- Develop students' ability to formulate questions as they read.
- Provide intentional instruction in using strategies to support their comprehension.

We will address each of these in the following section and draw parallels to how you use them in your own reading.

BUILD METACOGNITION TO DEVELOP READING COMPREHENSION. *Metacognition* is often described as thinking about one's thinking; it is also being aware of what one knows and does not know. Consider what you do when you read a set of instructions for a new gadget you just bought. You understand your purpose: to figure out how to use this new thing. You've got a plan—most likely you read a step, try it out on the device, and

then return for the next set of instructions. If it doesn't work, you reread and try it again, perhaps consulting some other blogs or videos posted online. When you're finished, you evaluate the instructions and your success. Those are all metacognitive skills. In similar fashion, your students need to use metacognitive skills when they read texts in your class (Kujawa & Huske, 1995):

- Develop a plan of action
- Maintain/monitor the plan
- Evaluate the plan

DEVELOP THEIR ABILITY TO FORMULATE QUESTIONS AS THEY READ. As we described earlier, reading comprehension is an active process undertaken by the reader. Therefore, the reader approaches text with a plan, uses the plan, and then checks to see if the plan worked. This metacognitive awareness can be modeled through instruction using questions before, during, and after the reading. Before beginning the reading, discuss with your class questions such as the following that readers ask:

- What is my purpose for reading?
- What do I already know about this topic?
- How long do I think it will take for me to read it?

This last element is often overlooked, but adolescents need practice with being able to accurately estimate how long it will take them to complete a task.

Teach your students to monitor their reading throughout. Longer, more complex readings can be parsed into smaller segments so that students can check their understanding. For instance, introduce monitoring questions to build the habit of seeking meaning throughout the reading, not waiting for it to somehow emerge at the end. While reading, ask students to pause occasionally at predetermined stopping points to ask themselves these questions:

- Do I understand what I'm reading?
- If not, what can I do to help myself?
- What do I already know that I can connect this information to?
- Do I need to change my pace?
- What are the important ideas?

When students have finished a passage, ask them to evaluate the plan by revisiting their purpose to gauge whether they were successful. Questions that can stoke their thinking include:

- How did I do?
- Did the reading meet my expectations?
- Did I understand?
- Do I need to revisit any part of the text?

Kujawa and Huske's (1995) model is designed to link prior knowledge to the new knowledge presented in the text. Much of the reading your students do in and outside the classroom is intended to bridge what they have learned with new information. The ability to do so is central to being able to comprehend any text. Yet too often adolescents do not see the link between what they learned last week or in a previous unit with the

information they are reading about today. By framing their reading with general comprehension self-checks, students strengthen the habits of planning and monitoring their understanding. However, students need modeling and scaffolding to achieve this level of independent and effective reading.

PROVIDE INTENTIONAL INSTRUCTION TO UTILIZE COMPREHENSION STRATEGIES. Students don't arrive in your classroom necessarily knowing how to plan and monitor their reading and writing. Most will benefit from your showing them how this is accomplished. Even advanced readers need some instruction on understanding how the texts in your subject work. The discipline-specific elements of the texts warrant some explicit instruction, modeling, and scaffolding of their use. In fact, these processes are at the core of effectively teaching the skills and concepts associated with your discipline, not just reading comprehension.

Learning can be fostered through intentional instruction using a gradual release of responsibility framework (Fisher & Frey, 2014). There are specific practices associated with each phase of learning:

- *Focused instruction is the "I do it" phase of learning:* The teacher ("I") establishes the purpose for learning, models and thinks aloud about using expert thinking, and provides demonstrations using direct instruction.
- *Guided instruction is the "We do it" phase of learning:* The teacher provides scaffolded instruction using questions, prompts, and cues in order to let students try on new skills and concepts with significant teacher guidance.
- *Collaborative learning is the "You do it together" phase of learning:* Students work with peers to consolidate their understanding of skills and concepts through discussion and joint efforts.
- *Independent learning is the "You do it alone" phase of learning:* Students deepen their learning by extending their knowledge through independent application of skills and concepts.

A few caveats. These phases describe a sophisticated set of instructional moves, and should not be misinterpreted as a hierarchical structure or a lesson plan for how you divide your instructional minutes. These phases do not need to be completed in lockstep order, but rather are used fluidly over the entire period. There are no rules to the order of these phases or how many times you return to a phase during a lesson. For example, you may need to model and then have students collaborate, and then model again based on the patterns of errors you identify, and then have the students collaborate again before you ask them to complete an independent learning task. However, all four of these phases should occur within every lesson, every day. It isn't a matter of how long the period is. Some schools have 90-minute periods while others have 45-minute ones. Rather, it is how you develop skills or concepts in the time allotted. In secondary schools, many of the skills and concepts develop over days and weeks. You are rarely developing a single skill in a single period. Can you see the following as a realistic description of an inquiry-based class using intentional instruction?

Students enter Claudia Fernandez's classroom and are greeted with a question on the board for them to answer in their notebooks that is designed to activate previously learned concepts (*independent learning*). After writing a short response to the question while Ms. Fernandez takes attendance, students are invited to check in with others at their table about their written responses (*collaborative learning*) before engaging in a short whole-class discussion. Ms. Fernandez listens closely for evidence of learning as well as knowledge gaps and makes a note of what she will return to later. She then

introduces a short exploratory activity designed to provoke their thinking (*independent learning*). Ms. Fernandez circulates and observes her students at work to gauge learning and records additional questions and speculations she is hearing. She then reveals the purpose for the inquiry activity and its link to the question that started the lesson, providing direct instruction about a new concept (*focused instruction*). She has students return to the inquiry activity at their tables in order to apply this new knowledge to their nascent discoveries, using questions, prompts, and cues (*guided instruction*). Ms. Fernandez then returns to the purpose of the lesson for closure (*focused instruction*) and asks students to complete an exit slip about the lesson (*independent learning*).

Now let's apply the gradual release of responsibility framework to instructional practices that foster reading comprehension:

- *Focused instruction:* You model and think aloud while reading a passage aloud, using the questions to demonstrate how you understand a text written for your discipline.
- *Guided instruction:* Students read a segmented passage independently, and you host short discussions periodically to assist them in monitoring their understanding.
- *Collaborative learning:* Students read and discuss a text together in small groups, with reading comprehension questions available to them on table tents.
- *Independent learning:* Students complete a reading on their own, with reading comprehension questions written on a bookmarker to remind them about monitoring their comprehension.

These are habits, not isolated skills, and as such develop over a long period of time. However, your continued attention to how texts are understood, not simply assigned, goes far in developing these comprehension habits.

Learning Begins With *Your* Intentions for Learning

We have discussed some of the elements of text and of reading comprehension, but we do not mean to suggest that learning happens by assigning texts. It is indefensible to assign a reading with no further support, telling students instead to answer the questions at the end of the chapter. That's not teaching—that's assigning. No one needs an advanced degree to do that. We use print, digital, and multimedia texts to support our teaching, not supplant it. The learning that happens begins with your ability to clearly establish the purpose for learning through learning intentions. You utilize texts to support your intentions for your students.

Learning intentions are daily statements that frame the purpose for learning. They are not the agenda for the lesson (although an agenda is a good management tool). The learning intentions signal students about what they will be learning that day. One way to present the learning intention is to frame it as three statements: content purpose, language purpose, and social purpose. Here is an example from an art class:

> *Content purpose:* Analyze Picasso's painting *Old Man with Guitar* for use of line, shape, color, space, texture, and value.
>
> *Language purpose:* View, discuss, and write about your insights using correct academic terminology.
>
> *Social purpose:* Collaborate in small groups with classmates to reach consensus.

The texts used in this lesson are the reproduction of the painting and the notes students consult to formulate their analysis. But the statement of purpose is essential for students to understand what they are learning, in part because they prime the students for the learning to come. In addition, it moves students from low-level compliance to taking ownership of their learning. These statements can be posted on the board, but more importantly should be discussed with the class. Middle school art teacher Julian Vasquez uses learning intentions to establish the purpose for learning:

> *Here's our learning intention this morning. We're going to apply what we've learned about the elements of art to a famous painting by Pablo Picasso. You'll understand when you see it why this work is called part of his Blue Period. Even people who don't know a lot about art are familiar with his Blue Period, and I want you to be, too. Keep your art notebooks handy so you can consult the definitions and examples of the elements of art we've developed already. That's our content purpose. You always use written and spoken language, and today our focus is on using these terms in your discussion within your small groups and in the written analysis each group will produce. The social purpose is important, too. In order to achieve your goals, you'll need to seek consensus in your groups. Let's review some of the statements we use to build consensus. You'll find them on the table tents in the middle of your tables.*

In the span of about three minutes, Mr. Vasquez has elevated the discourse in his class by taking the time to establish the learning intentions for the lesson. Although this seems relatively simple, these statements represent the teacher's deep understanding of what he actually wants his students to learn (not just do) in this lesson.

Students Need to Know What Success Looks Like

Learning intentions set the stage for the lesson and help students understand the purpose for learning. Success criteria work in conjunction with the learning intentions to give students a clear vision of what success looks like. Students equipped with learning intentions and success criteria are able to drive their own learning, rather than revert to the passive stance that hinders progress. Success criteria come in many forms, including rubrics, "I can" statements, and self-assessment checklists. As with learning intentions, success criteria are utilized daily to assist students in understanding what their destination looks like. Imagine taking a trip and not knowing where you were headed. Yet too often, students do not have a clear sense of how to gauge their own progress toward success. Instead, they must rely solely on the teacher to tell them when they have mastered something. Success criteria provide students with a means of checking their own progress.

As with learning intentions, developing success criteria requires that the teacher understand success. That means that the teacher must examine and then articulate success. One method for doing so is to use past student examples (with names removed) to discuss success. Mr. Vasquez did this at the beginning of the semester to introduce his art writing rubric. After distributing the rubric, he conducted some short think-alouds about the student writing samples that scored at various levels on the rubric. He then led the class in discussion of students' advice about how these writers could have improved their scores. Now let's build on the learning intentions the art teacher introduced to his students in the previous section. He continues:

> *I'll remind you of the criteria for success. Consult your writing rubric for the class to make sure your group has included all the features for a short written analysis. Once your group has*

composed your analysis, submit it on the learning management system with a self-assessment score using the guild ranking system. How do you rate your group's knowledge of today's content?

1. ***Apprentice:*** *We need more help with this and there are important parts we don't understand.*
2. ***Craftsperson:*** *We need to apply these concepts to other works of art.*
3. ***Journeyperson:*** *We could do this mostly alone.*
4. ***Master:*** *We can assist others in this content.*

If you are already thinking that this sounds like assessment, you are correct. We will explore the many contours of assessment in Chapter 10, but for now it is sufficient to say that formative assessment begins at the top of each lesson, includes self-assessment, and drives instruction. Assessment should never be restricted to the summative assessments that occur at the end of a unit of instruction.

Teaching That Is Transportable and Transparent

The strategies outlined in this book are designed to fit easily into the school day. We identify them broadly as content literacy strategies, rather than disciplinary literacies. These strategies have a research base and a practical foundation for ensuring that students understand the content that they are being taught. Students need guidance through informational texts, not simply an assignment to "read pages 118 to 132 for homework tonight." We like to think of these literacy strategies as being transportable across subjects. What we mean is that each is flexible enough to be applied to a variety of learning situations. For example, a strategy is transportable for a student when she uses vocabulary skills learned during a history lesson on the Antebellum South to understand antecedents in her psychology class.

Over time, these strategies become transparent to learners. As teachers, we are thrilled when we hear students murmur in recognition when we speak of graphic organizers or anticipation guides. It tells us that our colleagues have done a great job in creating a common vocabulary across the grade levels. It also means that when we collectively teach these strategies, we end up spending less time mired in the mechanics of getting the lesson under way. Setting up a graphic organizer becomes an instructional routine that takes seconds rather than half the morning. In other words, it allows us to use an instructional shorthand that gives us more time to actually teach the content. Ultimately, we hope that these strategies are transparent in our students' learning lives as they become aware of how they learn.

We advocate for schoolwide approaches that magnify literacy and learning across subject areas, and we see the evidence of a schoolwide approach in our own school experiences. We believe that it takes time and collegial conversations to develop a shared vocabulary of teaching and learning, and these conversations spring from a habit of reflective teaching. In other words, it is not a program, a set of books, or a box of materials that creates a high-achieving school. It is always teachers who matter, and what they do that matters most. And a teacher's ability to teach reflectively ensures continued professional growth.

Reflective Teaching

When we use the term *reflective teaching*, we are speaking of the habits of mind of effective educators who practice a recursive cycle of self-questioning and self-assessment

to improve teaching and learning. Reflective teachers take the time to stand back from the fray and ask:

- How effective was I today?
- What can I learn about my teaching by looking at today's lesson?
- How can I improve my teaching?

Teaching is both an art and a science, and each of these perspectives requires that we take a step back from what we have been doing to analyze the efficacy of our practice. At best, teaching is inexact because the context keeps changing—student needs never remain static, and demand in how we create meaningful learning opportunities for them always shifts. Therefore, it is impossible to replicate the same lesson exactly. You need only look to your own variation in teaching the same lesson content in two class periods. We often hear teachers remark that they taught a small-group lesson more effectively for the second group. This is reflective teaching in action because these teachers are self-questioning and self-assessing. This applies across lessons and entire years as well, and we believe that a strong repertoire of strategies for your instructional tool kit can help you arrive at solutions to these reflective questions.

A Professional Invitation

This point is simple but often overlooked in the busy world of a teacher: To enjoy and flourish in your job, you can never stop learning. It is ironic that those of us in the business of learning, caught up in the delivery of information and the orchestration of the classroom, have little time left to engage in our own learning. After all, the teacher is the oldest in the room and, by tradition's unspoken and timeless decree, the one who is supposed to know what he or she is doing.

The remainder of this book focuses on instructional strategies and planning tools that you will find useful in ensuring that your students can read for information. Note that specific instructional strategies are highlighted in different grade levels and in different content areas. That does not mean that the strategy would fail to work in another content area or grade level. For example, word sorts are highlighted in a biology class while studying molecules of life. Of course, word sorts can be used to teach vocabulary in other grades and other content areas. This holds true for all of the major strategy chapters—the specific examples in this book are not tied to a specific content area or grade level. We hope that you will read each scenario and consider how it applies in your subject and grade level. We provide examples for the following strategies:

- Building and activating background (Chapter 2)
- Vocabulary instruction (Chapter 3)
- Read alouds and shared reading (Chapter 4)
- Questioning (Chapter 5)
- Collaborative conversations (Chapter 6)
- Graphic organizers (Chapter 7)
- Note taking and note making (Chapter 8)
- Writing to learn (Chapter 9)

In addition to these specific strategies, we provide information on assessing students on their progress as part of Chapter 10, where we address the ways that teachers prepare

students for standardized tests. In particular, we will discuss how the literacy practices profiled in this book better prepare students for such tests.

Conclusion

To summarize, we return to the objectives from the outset of the chapter and provide a brief review of the information the chapter contains.

1. *Identify the role that language plays in learning.* Humans learn by reading, writing, speaking, listening, and viewing. In other words, we all learn through language. If content area teachers want their students to learn, they must ensure that they provide opportunities for students to read, write, speak, listen, and view each day. That means that class time can't be only a set of listening tasks. Students must engage in each of the literacy processes to develop a strong understanding of the content.
2. *Describe ways in which struggling readers can engage in learning in content area classes.* Through language! When their teachers ensure that students have opportunities to develop language based on the content being learned, students progress in both their knowledge of that content and literacy. This chapter profiled numerous strategies, including the ones used by Mrs. Johnson. This book is filled with strategies that teachers can use to ensure that all students learn at high levels. It's the instruction using reading, writing, speaking, listening, and viewing that helps students develop academically. Of course, some students also need reading interventions from literacy experts, but that is beyond the scope of this book. All teachers can contribute to students' literacy development provided they use the right strategies.
3. *Discuss the shared responsibility for literacy development among all teachers.* One period of English class alone is not enough to ensure that literacy develops at appropriate rates. We do not subscribe to the idea that "all teachers are teachers of reading," but we do think that every teacher should use literacy strategies to ensure that students grow as readers, writers, and thinkers. To quote a cliché, it takes a village, and in this case, the village is the various teachers students encounter in their day.
4. *Compare and contrast disciplinary and content area literacy.* Disciplinary literacy builds on more generic approaches, such as content literacy. For example, experts across disciplines take notes, so it is reasonable to use that content area strategy to develop students' habits. Having said that, there are nuisances in the literacy behaviors of experts in various disciplines, as was discussed in the chapter. For example, historians contextualize when they read and look for corroborating evidence. We do not see this as an either/or proposition, content literacy versus disciplinary literacy. Students needs both generic and specialized literacy learning.
5. *Summarize the concepts of reading comprehension and intentional instruction.* Reading is about meaning making, and there any number of appropriate strategies that develop students' ability to understand and analyze increasingly complex texts. Students need to develop metacognitive awareness, learn to ask a lot of questions, and experience high-quality instruction to develop their comprehension prowess. Intentional instruction has several phases or components, all built about a learning intention and success criteria. Intentional instruction involves teacher modeling, collaborative learning, guided instruction, and independent learning.

Chapter 2
Setting the Stage: Building and Activating Background Knowledge

Learning Objectives

2.1 Describe the model of learning presented in this chapter.

2.2 Identify four categories of tools for gaining students' attention.

2.3 Describe ways that teachers can build and activate background knowledge.

2.4 Identify the commonalities of the strategies useful for building and activating background knowledge.

Ten images of war are displayed around the 10th-grade world history classroom. As teacher Stephanie Jordan speaks, she moves to one of the memorable photographs of Robert Capa, one of the 20th century's most notable combat photojournalists. "Imagine how war was viewed before his work appeared. It wasn't common to see violent images because there weren't many places to show them," she explained. "But imagine what it was like to get your copy of Life *magazine and see this," gesturing to Capa's* Falling Soldier. *The photograph of a Spanish Civil War soldier at the moment he was struck by a bullet is chilling, even more than 80 years later.*

"It would get people talking," remarked one student.

"Exactly," replied Ms. Jordan. "Images of the Spanish Civil War brought the conflict to the doorsteps of Americans and got them to pay attention to this conflict. In this unit of study, we're going to see how media played a role in setting the stage for American involvement in international conflicts."

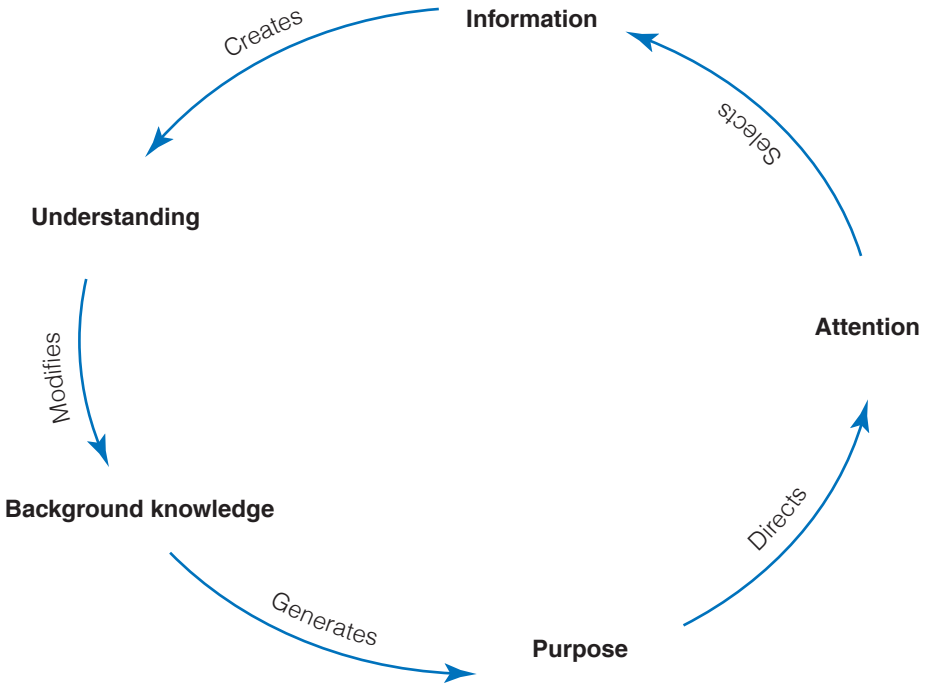
Did this teacher capture your attention? Anyone who has ever faced the task of teaching a group of people can appreciate the importance of attention as a factor in learning. After all, if students aren't paying attention, how can they process new information?

When we speak of attention, we are not referring to behavior management, but rather to practices that elicit curiosity, provoke questions, and evoke recall of newly learned information. Activating students' background knowledge about the topic is one way to gain their attention. You may have noticed, too, that Ms. Jordan evoked the disciplinary literacy of her subject when she spoke about the effect of Capa's photograph on the public's perception of the war. She didn't show the students this simply to get them interested—she used it to demonstrate how a historian would view this artifact. Activating students' background knowledge, which can include an understanding of the unique perceptions of the discipline, builds an essential foundation for future learning. This is really the very beginning of the learning process, although it is not bound in time to the beginning of a course, class, or lesson. Learning, in a large part, occurs when information is connected to what you already know. Learning occurs when we modify what we already know or think about a topic. But learning is a cycle, as noted in Figure 2.1.

Note that you can start anywhere, but most of often learning starts with background knowledge. When connections are made to what students already know, purposes for learning can be generated, which directs attention, allowing the learners to select information and to create understanding, which in turn modifies learners' background knowledge. This cycle is based on schema theory (e.g., Rumelhart, 1980). Thus, tasks that activate and build background should be tied to the introduction of new concepts, not simply to the first 5 minutes of a class period. Remember, effective teachers create memorable events throughout their lessons to capture student attention. It does little good to be motivated for the first 5 minutes only to be bored for the next 50 minutes.

It is also important to note that building and activating background knowledge is not intended to provide entertainment for students, but to scaffold learning so that the

Figure 2.1 Learning Cycle



cognitive responsibility for learning shifts to the student. A primary goal of classroom instruction is to move from teacher-directed instruction to student-centered learning. You will recall from the previous chapter that the gradual release of responsibility instructional framework helps you to accomplish the move from teacher-directed to student-centered learning as it articulates a method from moving from instruction (focused, guided) to learning (collaborative, independent.) These memorable events may also use drama, humor, movement, or emotion to make an impression on learning.

Eggen and Kauchak (2001) suggest four instructional routines for gaining student attention:

1. demonstrations,
2. discrepant events,
3. visual displays, and
4. thought-provoking questions (p. 271).

We will discuss each of these in detail and then take a look inside classrooms to see how teachers across the content areas are using these to stimulate curiosity, build background knowledge, and promote learning.

Demonstrations

Classroom demonstrations are typically performed to display a theory, concept, or phenomenon. A demonstration of gravity is likely to involve dropping objects from a height; a demonstration of fractions and decimals might include several apples sliced into equal parts. The use of demonstrations is critical in the field of mathematics (Murray, 2013) and is associated with higher levels of learning in science (Fung, 2016). Don't overlook the availability of technology to enhance demonstrations of complex phenomena. For instance, students can watch how an earthquake occurs, view an interactive timeline of wars throughout human history, or dissect a virtual frog. The use of demonstrations to illustrate and augment lecture and readings is particularly effective for students with disabilities (Janney & Snell, 2000) and English language learners because demonstrations are enhanced by physical and kinesthetic involvement. Having said that, it is important to note that an interesting demonstration does not replace the need for deep exploration of concepts. Also, don't overlook the importance of telling students that the demonstration is important to remember, and why. These simple statements of emphasis have been shown to be effective when coupled with demonstrations (Eggen & Kauchak, 2001).

Discrepant Events

Discrepant events are those that involve a surprising or startling occurrence designed to command the students' attention. A performance may be staged—for instance, another teacher may be recruited to rush into the classroom to hand the social studies teacher a copy of a newspaper dated December 7, 1941. Hurst (2001) suggests that attention-grabbing events are a key element to content area lesson planning, along with focused lessons and comprehension instruction. Events such as these can assist students in organizing new information, integrating it with prior knowledge, and increasing their ability to retrieve it later.

Discrepant events can access a powerful aid to memory—emotional connection. As humans, we have a tendency to remember episodes connected to our emotional

memories, such as a favorite birthday party or a first kiss. The associations may be negative as well—readers may recall where they were when they found out about the terrorist attack on the United States in 2001. Whereas discrepant events in the classroom are unlikely to be connected to such intense emotions as these, it is important to recognize that they tap into the same neural pathways. Integrating music, art, and dramatic play can provide a means for accessing students' emotional memory increasing their ability to retrieve the information at a later time (Sprenger, 1999). Jorgensen (1998) calls these events "grabbers" because they command student attention and capture the imagination.

Visual Displays

Because visual displays such as graphic organizers are more thoroughly presented in Chapter 7, we confine our discussion here to what Hyerle refers to as "visual tools for constructing knowledge" (1996, p. 1). The rise of information technology has fundamentally changed the way information is generated and shared. Unlike earlier classroom technologies such as televisions and video recorders, today's technologies are interactive and require the active participation of the learner. No longer is visually presented information viewed as a passive experience to be absorbed by the learner. Rather, it is seen as a generative process in which the learner influences and changes the information. This is at the heart of visual literacy—the ability to interpret, analyze, and create visual displays of information that are accurate and complete. Students need exposure to, and experiences with, visual displays of information in order to develop these abilities. The box feature on the next page includes several tools that teachers can use to create visual tools, especially video and screen casting.

The ability to interpret visual displays of information is critical in mathematics and in science. Students must transcend more general content area skills to interpret graphs, whether it be to understand functions in Algebra 2 or to examine changes over time in a data log on water samples collected in tide pools. Teachers of these subjects are able to illuminate how the discipline displays and shares information with other professionals. As an illustrative point, consider the conceptual understanding that business students need to interpret a spreadsheet of annual profits and losses reported by a corporation. Simply knowing how to read a graph would be inadequate. It is the deep conceptual understanding behind it that is crucial for accurate analysis.

Interactive whiteboards are a part of many secondary classrooms, as they allow teachers to display and manipulate visual information in innovative ways. Of course, what makes the board "smart" is the user. It is important to remember that interactive whiteboards are a tool, not an end unto themselves. When using presentation tools such as interactive whiteboards and document cameras, keep the *function* in mind. These functions, whether print based or digital, include interpreting, analyzing, locating, producing, and sharing information.

In addition to electronic sources, many print-based visual displays are readily available for classroom use. For example, many textbooks feature four-color images of places, people, and objects. Select some of these powerful images to display on an overhead projector and invite students to discuss their impressions. Photographs from picture books and photoessays can help students understand information to be learned in the unit of instruction. *Through the Lens: National Geographic Greatest Photographs* (Val, 2009) offers arresting images from the last 100 years. Teachers of American history can find an archive of little-known images in *African American Vernacular Photography* at the International

Tech Tools for Creating Visual Content

1. **Clips.** As the name implies, this free iOS app from Apple is meant for creating short videos that can be easily shared through social media and messaging services. A standout feature of Clips is the ability to automatically add subtitles to the videos it creates to make them more accessible.
2. **iMovie.** Students who are ready to step up from Clips can use the free iMovie for iOS app to shoot and edit a documentary or short film that captures key ideas about a topic with video clips, photos, music, and audio narration. For those who need a more powerful editor, the **Mac version of iMovie** (also free) is an even better option.
3. **TouchCast Studio.** This free iPad app has everything learners need to create interactive videos that include hot spots linking to a variety of Web content. Learners can use a number of video apps (vApps) to link to supporting research on the Web, ask questions through polls, find a script of their video for accessibility, and more. The app has a number of advanced features, including a built-in teleprompter, green screen capabilities to allow learners to place themselves into different settings, and multicamera support through a connected iPhone.
4. **Story Remix.** This is the follow-up to the popular but now discontinued Windows Movie Maker (available for free with the Windows 10 Fall Creators Update). Learners can combine photos, video clips, music, and audio narration to tell a story. Remix can even automatically generate a video by selecting the best shots and clips. Learners can use the video as is or further customize it with a number of effects that include 3D objects and animated characters. Learners who need a more powerful video editor can look to commercial options such as **Adobe Premiere Elements** ($99.99) or **Pinnacle Studio** (starting at $59).
5. **WeVideo.** Chromebook users have fewer options for video due to the limited hardware built into their devices, but they can perform basic edits with this Chrome app. WeVideo is available with a number of subscription plans (depending on the features and storage space needed) that start at $4.99 per month for individuals (with volume pricing for schools).

Source: Used with permission from International Society for Technology in Education. 30+ tools for diverse learners, Retrived from https://www.iste.org/explore/articleDetail?articleid=434

Center of Photography (https://www.icp.org). English teachers might use *Stranger in the Woods* to teach foreshadowing (Sams & Stoick, 2000). Science instructors can use visual images from the illustrated edition of *On the Origin of Species* (Darwin & Quammen, 2008) or *The Hubble Space Telescope: Imagining the Universe* (DeVorkin & Smith, 2004).

Thought-Provoking Questions

Thought-provoking questions are intended to assist students in organizing new information. Like discrepant events, they are meant to appeal to the emotional channels of learning. The use of a provocative question, particularly one that defies a simple answer, has been recognized as a method for promoting interest and sustaining learning by inviting students to formulate an understanding of the material (McTighe & Wiggins, 2013). These questions may be of a general investigatory nature, as in the KWL technique (Ogle, 1986). K-W-L stands for "What do I **know**? What do I **want** to know? What have I **learned**?" This organizer mirrors the process of scientific inquiry inherent in any investigation. Typically, a teacher will arrange these questions into three columns and then prompt discussion about the new topic of study. Student responses are recorded and then become the guide for subsequent study. This technique has been modified in a number of ways, including K-W-L-Plus (Carr & Ogle, 1987), which adds summarization, and K-W-L-H (Wills, 1995) that adds "**How** do I know?" to focus on sources of evidence. The recursive nature of inquiry is emphasized through K-W-L-Q

(Schmidt, 1999) when a fourth column for further questions is added at the end of the unit of study.

Other thought-provoking questions might be more specific to the unit and are likely to encourage an interdisciplinary study. A question like "What is a hero?" is far more interesting than a unit titled "Heroes of the 20th Century" and is likely to promote greater student interest. McTighe and Wiggins (2013) refer to these as essential questions because they ground the unit conceptually. Essential questions are difficult to answer succinctly and require investigation and inquiry. Examples of essential questions include:

- Can money buy happiness?
- What is the difference between surviving and living?
- Mark Twain said, "History is lies agreed upon." Was he right?
- What is race and does it matter?
- Which is stronger, mind or heart?

We have discussed the importance of gaining and sustaining student attention to promote and extend learning. Now let's take a look at how teachers are using approaches to build and activate background knowledge in their content area classrooms.

Strategies at Work

Building and Activating Background Knowledge in English

DISCREPANT EVENTS THROUGH STAGED EXPERIENCES. Abdulrahim, an immigrant from Somalia, arrives at the doorway of his 11th-grade American literature class and stops abruptly. His teacher, Sharonica Green, does not seem to be present. Yellow and black crime tape is strung around the classroom and an outline of a body marked off in white medical tape occupies the center of the classroom floor.

"Don't touch anything! You'll disturb the evidence."

Abdulrahim looks up in surprise to see this teacher wearing a trench coach and brown fedora. The students quickly take their seats, which have been pushed up against the walls of the classroom, leaving space in the center of the room. They seem intrigued by what might happen next.

The teacher, transformed into a hard-boiled detective, walks the room and discovers what might be a murder weapon, saying "I see the weapon, but this seems just too obvious. It's hidden in plain sight. It's as if the person who put it here wanted me to find it with only a little bit of a search." The teacher-detective continues around the room, pausing by the stack of books.

"There are clues here. We just have to find them. Welcome to our study of American mystery novels. My name is Philip Marlowe and I'm the best there is."

Over the next 4 weeks, Abdulrahim's class will explore the writings of California mystery novelists Raymond Chandler and Dashiell Hammett. The students will come to understand the genre and its characteristics as well as representative texts that define the genre. Their introduction, through a bit of a surprise visit, generated great interest in the topic, and the students seemed eager to get started with their readings.

As Ms. Green says, "I gotta shock 'em every once in a while. I keep my students wondering what might happen next. Really, I'll do anything to get them interested in books. These hooks seem silly to some people, but year after year, my students tell me that they remember my antics and the books they read with me."

The books by these authors include a range of settings, characters, and conflicts. Some of the texts are more complex than others. By not assigning one text for every student to read at home, Ms. Green provides support for students who are achieving at different levels. Instead, she helps each student find a text in the genre under investigation that they can read. In class, students read with her support using shared readings and close readings (which are further explained in Chapter 4). But Ms. Green knows that her students have to gain practice in the genre, through reading texts on their own, if they are going to come to understand it and be able to make informed decisions and choices about the future books they want to read. As she says, "Reading a lot is important because it builds background knowledge and vocabulary. I let students choose books to read at home so that I can get their reading volume to increase." And there is good evidence for this. When students are provided access to things to read, choices in what they are going to read, opportunities to talk about their readings during school, and receive recommendations from their teachers about potential texts to read, reading volume increases (Fisher & Frey, 2018).

THOUGHT-PROVOKING QUESTIONS THROUGH ANTICIPATION GUIDES. An anticipation guide is a teacher-prepared list of statements that connects to a passage of text. The purpose is to activate prior knowledge, encourage predictions, and stimulate curiosity about a topic (Head & Readence, 1986). These guides are usually constructed for use with texts that are controversial or commonly misunderstood, such as those on sharks, slavery, or the legal age for drinking alcohol. These guides are useful for promoting class discussion as well because they can spark debate and foster the inevitable need to consult other sources of information. In addition, they provide a visual record of student learning as it scaffolds their increased understanding of the reading.

Mia Taylor used an anticipation guide in her class study of the Los Angeles Zoot Suit Riots of 1943, which she uses as an introduction to Mexican-American literature across time. The Zoot Suit Riots were violent clashes between Mexican-American youths and American servicemen brought into Los Angeles from Southern California military bases. The riots are now understood to have been racially motivated, but at the time of these events the Mexican-American community and "zoot suiters" in particular were blamed for the riots. Ms. Taylor prepared an anticipation guide like the one in Figure 2.2. This approach is useful in identifying gaps in knowledge, misconceptions, and areas of mastery. For example, if all of her students recognized that others suffered from discrimination and injustice, not just Mexican Americans, then Ms. Taylor would not need to spend time on that concept. There may be other concepts that are much more worthy of the instructional time and focus. In analyzing students' understanding and misconceptions using an anticipation guide, Ms. Taylor has a much better chance of meeting her students' needs and addressing any gaps that her students have in their knowledge.

Many of the statements do not appear directly in the text that the students would be reading, *Zoot Suit Riots: Clothes, Culture and Murder* (Turner, 2015), but rather are inferred from several places in the reading and the research that they would be doing. Some are "think and search" questions that are intended to give students experience with putting together answers from more than one sentence (Raphael, 1986). Others

Figure 2.2 Anticipation guide

Discuss each statement with your group. Mark your opinion and then read the assigned Web site to check your understanding.

BEFORE READING			AFTER READING	
True	**False**		**True**	**False**
		1. When bad times came, Mexicans who had been encouraged to come to Los Angeles were seen as "job stealers."		
		2. Thousands of Mexicans, some with children born in the United States, were sent back to Mexico.		
		3. Mexicans were the only group to suffer from discrimination and injustice.		
		4. Headlines in newspapers disapproved of the attacks.		
		5. The servicemen who took part in the attack were prosecuted.		
		6. Eleanor Roosevelt blamed discrimination as a root cause of the riots.		
		7. Today, there is more anti-immigrant sentiment in California.		

After reading the assigned text, discuss your answers with your group. Identify whether you believe the statement is true or false in the "After reading" columns.

require both information from the text as well as students' personal experiences—so-called "in the head" questions that often demand more complex answers.

Perhaps the most challenging part of developing an anticipation guide is identifying a provocative text that will motivate your students to discuss, debate, disagree, and confront their own misconceptions. Once that is done, the steps to creating a guide are fairly simple (Head & Readence, 1986):

Step 1: *Identify the major concepts in the reading.* What are the main ideas in the passage? Keep it to two or three so the guide won't be too long.

Step 2: *Consider your students' prior knowledge.* What are they most likely to hold misconceptions about?

Step 3: *Write 5 or 10 statements pertaining to the reading.* Don't make them all factual—be sure to create open-ended statements as well. Look again to your major concepts to make sure you are creating statements that relate to large concepts rather than isolated facts.

To use anticipation guides, introduce the tool and ask students to complete it before reading the text, watching the video, or engaging in the lesson. Either during or after the learning, encourage small-group discussions of the statements, and invite students to confirm or disconfirm their beliefs. This is an ideal opportunity to connect

this activity with a strategy employed by critical readers—the self-assessment of beliefs and assumptions that may be supported or disputed by a reading. After all, it is this cognitive dissonance that challenges all of us to continually refine what we know.

Building and Activating Background Knowledge in Social Studies

DEMONSTRATION THROUGH GUEST SPEAKERS. Many educators acknowledge the role of experience in learning, especially for adolescents (Dewey, 1938/1963). The transformative nature of experiences can assist learners in connecting knowledge to its application and variation in the larger world. Experiences can also provoke reflection as students begin to understand that knowledge is not fixed and static, but is constantly tested by new experiences (Kolb, 1984). This theory, called *experiential learning*, has its roots in the work of John Dewey and has been extended by the educational research of the past decade (Seaman, Brown, & Quay, 2017). Internships and community service hours are common examples of experiential learning in high school. However, teachers can also use the tenets of experiential learning in the classroom by introducing students to community members who apply the topics being studied to their own work. This can be considered a unique form of demonstration through the experiences of others while serving as an interesting means of introducing a course of study. When the experiences offered through guest speakers are introduced to the classroom, students can clarify their understanding through the eyes of another.

The use of guest speakers in social studies courses is popular, perhaps because the study of the past and present often converge in the living examples of members of the community. At its best, guest speakers provide students experience with discipline-specific literacies as they discuss their area of expertise. Historical study of war has been a particularly rich field for guest speakers. A Vietnam War veteran can speak to the experience of being 18 years old and drafted (Poling, 2000). Students can begin to glimpse the meaning of 6 million dead when they can talk with a Holocaust survivor (Glanz, 1999). Attitudes can change when students meet a citizen from another country who shares direct experiences about growing up there (Giannangelo & Bolding, 1998). Guest speakers can also contribute to the understanding of students when they are experts on a topic. Importantly, guest speakers can provide readers with access to content that they might otherwise miss from texts that they are reading. Armed with information from the guest speakers, the texts become more accessible for students.

Tom Fehrenbacher's world history class had been studying the role of the arts in both reflecting and driving political events. Their inquiry included *Uncle Tom's Cabin* by Harriet Beecher Stowe (1852/1983) and Pablo Picasso's painting *Guernica*, an indictment of the 1937 Nazi bombing of a small Spanish town. Mr. Fehrenbacher wanted to include a study of the "Ring" cycle of operas by Richard Wagner and their influence on Adolf Hitler but knew that this form of music was unfamiliar to his students. He contacted the local opera society and arranged for a guest speaker to share information on this operatic music form.

Mr. Fehrenbacher knew that he would need to prepare his students for their visitor, so he established the purpose and introduced technical vocabulary like *aria*, *leitmotif*, and *soprano*, and then posted them for easy reference so that these would not be unfamiliar when the guest speaker used them. He also created a form for his students to use during the lecture and charted some of their questions for use during the visit (see Figure 2.3).

Figure 2.3 Student form for guest speakers

Name of Speaker: _____ Date: _____

Purpose of Visit

Unique Experiences

Connections

Questions

Answers

When the representative from the opera society arrived, he was delighted to find the students primed for his visit. He gave a brief presentation on the origins of opera in Italy and explained the differences between operas and musicals. He then played excerpts from a selection of operatic works to give the students an idea of the range of the art form, from the light comedies of Mozart to the dramatic works of Bizet. He also included samples of *Porgy and Bess,* a 20th-century opera by George Gershwin. Students were able to ask questions and clarify their understanding of the general knowledge of opera. Mr. Fehrenbacher later described the visit as a success and attributed the preparation of the class to the success of the discussion. He also offered advice to ensure a successful visit with a guest speaker:

- *Discuss the purpose and audience in advance.* Furnish specifics in writing about the objectives for the visit—guests welcome this level of detail because it helps them prepare. Make sure that you have discussed any technology needs, including visual and audio displays. Discuss the number of students involved, and don't surprise the speaker with a few "extras" on the day of the presentation.
- *Prepare the students as well.* A guest speaker who appears unrelated to students' current unit of study may be viewed as a "filler" rather than being central to their understanding of the course materials. Make sure students are familiar with the work of the guest and have an adequate command of vocabulary and terminology the speaker is likely to use.
- *On the day of the visit, have the room and students organized for the presentation.* Don't waste time with moving furniture and students while the guest stands by.
- *Be an active participant in the presentation.* This is not the time to grade papers—ask questions and make connections for your students. You are modeling the behavior you expect from them.
- *Have a backup plan in case the speaker is unable to show.* Emergencies happen and you don't want to be left with lots of down time.
- *Write a note of thanks after the visit.* Your mother would be proud. If the speaker is representing a place of work, copy the letter to his or her supervisor.

Building and Activating Background Knowledge in Mathematics

ADVANCE ORGANIZERS IN ALGEBRA. Secondary students are often required to read extended passages of text containing complex ideas and concepts. A challenge for content area teachers is that the very reading materials essential to learning the content may be too complex for students to process. One method for scaffolding comprehension of text passages is through the use of an advance organizer (Ausubel, 1960). There are two types of advance organizers—expository advance organizers, meant for use with texts containing new material, and comparative organizers, which link new knowledge with previously learned material (Ausubel, 1978). These are not just summaries of the passage—they are meant to contain more complex information than the reading alone offers so that students can gain a sense of how the information is associated with other concepts and ideas. The use of advance organizers can enhance student recall and understanding of the material.

In their study of specific reading strategies useful in mathematics lessons, Carter and Dean (2006) noted that vocabulary instruction, questioning, and anticipatory activities such as using advance organizers and guides improve students' comprehension of the mathematical text.

In order to prepare his algebra students for an end-of-course test, Aaron Sage chose a shared reading of poems from *Math Talk* (Pappas, 1991). These unique poems are designed to be read by two voices, or groups of voices. After modeling the performance of one, Mr. Sage assigned a poem to each small group, having specifically formed the student groups such that each group was academically diverse. In his class of 35 students, 5 students had identified disabilities and several students struggled with reading. Their task was to perform the poem for the class and explain the mathematical concepts contained in it. The purpose of this lesson was to give students a creative means for reviewing the major mathematical concepts featured on the upcoming test. In addition to the poem, their textbooks, and mathematics notebooks, the groups were given a comparative advance organizer on their assigned poem's topic. For example, one group was given a poem on imaginary numbers. Their advance organizer appears in the following box.

This advance organizer made connections between the information contained in the poem and knowledge learned from earlier in the year. It is important to note that the advance organizer contained more complex information than the poem itself contained—a hallmark of the strategy. In this case, the advance organizer was a bridge between the poem, the textbook, and the students' notes. With advance organizers like these, the teacher can consider both the information contained in the text and the prior knowledge and experiences of the students to create a higher order of associative learning than the text alone can offer.

Building and Activating Background Knowledge in Science

DEMONSTRATIONS IN CHEMISTRY. Perhaps there is no content area more perfectly suited to classroom demonstrations than science. A jaw-dropping demonstration can provoke wonder and inquiry and establish real purpose to subsequent study of a scientific concept. These memorable occasions can also be considered discrepant events because they use the element of surprise to motivate. They may be considered visual displays as well because they activate memory and retention through motion and light. We suspect that inside every good science teacher there is a young child who was mesmerized by a dazzling display of a mysterious scientific concept. In his autobiography *Uncle Tungsten: Memories of a Chemical Boyhood,* Oliver Sacks (2001) recounts life in a household surrounded by parents and siblings deeply involved in the sciences.

IMAGINARY NUMBERS

This poem discusses imaginary numbers and uses humor to remind us how odd it is to have numbers that "don't exist." Of course, they do exist because they help us solve equations. An imaginary number is the square root of a negative number. It is called "imaginary" because any number that is squared results in a positive number. It is written as "*i*" and is defined as $i = \sqrt{-1}$. It is used in physics and engineering.

In a chapter titled "Stinks and Bangs," he writes of a demonstration he performed as a 10-year-old with his two older brothers:

> Attracted by the sounds and flashes and smells coming from my lab, David and Marcus, now medical students, sometimes joined me in experiments—the nine- and ten-year differences between us hardly mattered at these times. On one occasion, I was experimenting with hydrogen and oxygen, there was a loud explosion, and an almost invisible sheet of flame, which blew off Marcus's eyebrows completely. But Marcus took this in good part, and he and David often suggested other experiments. (p. 77)

Chemistry teacher Robert North uses the "stinks and bangs" of science to motivate and stimulate interest in chemistry. A member of the local American Chemical Society, he recruits eighth graders from middle schools to foster their interest in science. He brings a "day of magic" to each feeder middle school and proceeds to dazzle them with a range of demonstrations of chemical wonders, always connecting to the scientific concepts that explain the phenomena.

Many of these same students sign up for chemistry when they reach 11th grade, enticed by the memory of amazing demonstrations and plenty of stinks and bangs. On the first day of the course, Mr. North sets a tone for the "Cardinal Chemists," his nickname for those enrolled in his course. While he introduces the rules of the class, he pours a small amount of isopropyl alcohol (2-proponol) into an empty 5 gallon water cooler container. Without explanation, he lights a match at the mouth of the jug and a loud "boom!" results, along with startled gasps and squeals of his new students. He then instructs them to quickly write about what they had just witnessed.

After inviting responses from the students, Mr. North prompts a discussion on the difference between an explosion and a burn, terminology many of them have just used interchangeably. He then gives students a few minutes to revise their writing using accurate vocabulary and reviews the rules again, reminding the class that they exist for the safety of all. Imagine the impact on vocabulary learning for students who have struggled with concepts in the past. This multisensory approach captured their interests, attention, and memory. When students complete their notes, he moves in for the final point— "Chemistry is the bomb!"

It is important to note that Mr. North's teaching is not all "stinks and bangs." He pairs writing with the demonstrations to give students an opportunity to clarify their understanding and support their inquiry of what is still unknown to them. He is also careful to ground his work in the theoretical underpinnings of each demonstration. Indeed, without this careful attention to the scientific concepts, students are likely to form misconceptions about what they have seen (Li & Li, 2008). But the powerful responses to anticipatory activities like this one are always part of the instructional repertoire of this teacher. "Science is fun," says Mr. North, "and there's a reason why it should grab students' attention."

Freedman (2000) recommends several principles for designing effective science demonstrations:

- *Establish a clear purpose.* The demonstration must be directly related to the scientific concepts being studied.
- *Plan the demonstration carefully.* This is more than just assembling the materials. What other learning experiences will the students need to have in order to understand the theoretical basis for the demonstration? Plan the related lessons to support student connections to important concepts.

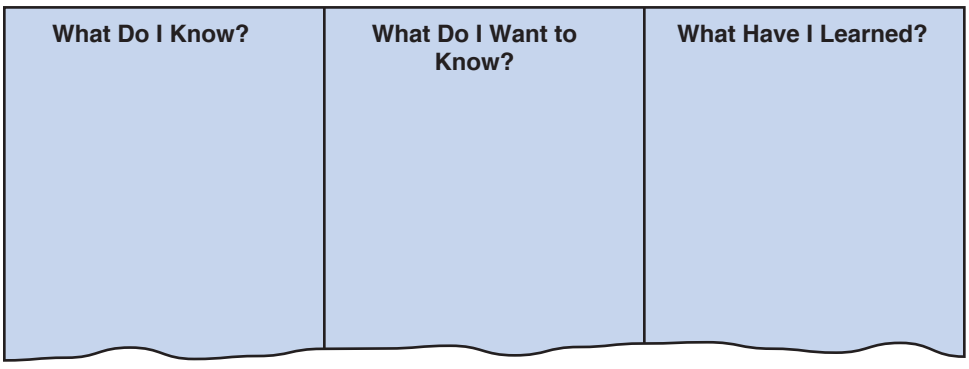
- *Plan for repeatability.* Students may need to see the demonstration again. Be sure to have extra materials on hand for this possibility. Also, be sure that the demonstration you've selected yields reliable and consistent results.
- *Plan for safety.* Although discrepant events like science demonstrations can enhance learning, your students don't need to witness you getting hurt.
- *Consider visibility.* A crowded classroom can make it difficult for your students to see and fully appreciate the demonstration. It can become a safety issue as well for them if they are jockeying for position. If the sight lines are obstructed in your classroom, consider dividing the class in half and performing the demonstration twice. If the phenomenon you are demonstrating needs to be seen from close range, then perform the demonstration with small groups of students.
- *Don't discount the importance of showmanship.* The literal and figurative "stinks and bangs" of science demonstrations can intrigue your students. Don't be afraid to play it up—your enthusiasm is infectious.

Building and Activating Background Knowledge in Electives

THOUGHT-PROVOKING QUESTIONS THROUGH K-W-L IN ART. As we discussed earlier in this chapter, a popular and effective anticipatory activity is K-W-L (Ogle, 1986). Remember that K-W-L (know/want to know/learned) is a method for activating prior knowledge and formulating questions to guide inquiry (see Figure 2.4). Teachers across content area subjects have confirmed the usefulness and flexibility of this technique for introducing a unit of study. Buehl (2013) identifies it as one of the instructional strategies essential in the repertoire of every secondary content area educator.

Andrew Merrill's art students are required to conduct in-class research on an artist of their choice every 2 weeks. Given that all students at his school must take at least one art class to graduate, Mr. Merrill has students with disabilities, English learners, strong readers, those not yet achieving at expected levels, and students who love (and hate) art. As Mr. Merrill says, "In art, students mix in interesting ways and I think it really helps them understand the world in better ways. My job is to make sure that they are all learning, and hopefully developing their appreciation of art."

Figure 2.4 K-W-L chart



SOURCE: Fisher, Douglas. Frey, Nancy (2018) Improving Adolescent Literacy: Content Area Strategies at Work, 5e. Pearson Education.

Mr. Merrill introduces research methods early in the year and models the first project on a single artist. He shows the students a selection of slides featuring the artist's work and invites questions about the paintings. Subsequent research projects are student directed and encompass every era from medieval to postmodern. As one scaffold for students, K-W-L charts are used for the initial component of each inquiry and are expected with every research report. Hayna, an immigrant and English learner, researched the life and work of Leonardo da Vinci. (We've included irregularities in grammar.) Her K-W-L chart is displayed in Figure 2.5.

Mr. Merrill's emphasis on the history of art, as well as its execution, connects past works to the students' original compositions. He has found that using K-W-L charts supports the development of research and inquiry skills among his students while giving him a way to prompt discussion about works of art and their creators.

"It's really the basis for what we do as artists. 'What has been done by others?' 'Where do we want to go with our own art?' 'Now that we've attempted it, what have we learned?' That's the artistic process in a nutshell."

Figure 2.5 K-W-L art inquiry chart

What Do I Know?	What Do I Want to Know?	What Have I Learned?
He was an artist He was famous He's dead	Why was he famous? Does he use the elements of art in his work? When was he born? Where was he born? When did he die? What influenced him? Was he only an artist? What were the names of his famous works? What material did he use for his work? What kinds of things did he paint?	He painted Mona Lisa and The Last Supper He used line, hatching, shadowing, 3-dimensional shading Born 1452 Born in Italy He died 1519 Imagination and creativity He was an inventor, scientist, and city planner Mona Lisa, The Last Supper Red chalk (sanguine) finely sharpened In early career, he drew/designed military arms Left-handed

SOURCE: Fisher, Douglas. Frey, Nancy (2018) Improving Adolescent Literacy: Content Area Strategies at Work, 5e. Pearson Education.

Conclusion

This chapter focused on the ways in which teachers could build and activate students' background knowledge to ensure that they are engaged in learning. The objectives include:

1. *Describe the model of learning presented in this chapter.* Learning is considered cyclical. There is no clear starting place because humans are always modifying what they know and think. The components of the model included background knowledge used to generate purpose, which then drives attention, allowing students to select information that creates understanding, thus modifying their background knowledge.
2. *Identify four categories of tools for gaining students' attention.* Demonstrations, discrepant events, visual displays, and thought-provoking questions are examples of the types of activities used by effective teachers. Demonstrations are typically used to display a theory, concept, or phenomenon. They are a staple of science instruction, but can be used in any content area. Demonstrations are particularly useful for English language learners because they foster mental models for concepts. It is important to remember that a demonstration does not replace the need for the theoretical basis for understanding the phenomenon. Discrepant events are useful for gaining attention and creating a lasting impression. These events are characteristically described as surprising or startling. Teachers have found success in using costumes and props to illustrate a character, setting, or era. In addition to picture books, the growing availability of technology makes it possible to include novel visual displays for illustrating an idea or concept. Thought-provoking questions are a primary tool for teachers to create anticipatory activities and to organize the content for students, including through the use of K-W-L charts.
3. *Describe ways that teachers can build and activate background knowledge.* This chapter provided a wide range of tools that teachers can use to build and activate background knowledge. This included staged experiences, anticipation guides, guest speakers, advance organizers, demonstrations, and K-W-L charts. But there are many more. The idea is to capture students' interest so that they attend to the lesson, and teachers should feel free to explore a range of tools to accomplish this.
4. *Identify the commonalities of the strategies useful for building and activating background knowledge.* The strategies presented in English, mathematics, science, social studies, and art had a lot in common, including the fact that responsibility for learning was shared with students. In each case, the teacher ensured that the content was relevant to the learning lives of students. The teachers also allowed students to work collaboratively as they built or activated their background knowledge. And further, each of the strategies involved language as a tool for learning content.

Chapter 3
Word for Word: Vocabulary Development Across the Curriculum

Learning Objectives

3.1 Summarize the value of vocabulary in students' content area learning.

3.2 Describe a process for selecting words worthy of instruction.

3.3 Describe what it means to "know" a word.

3.4 Identify ways that teachers can increase students' word knowledge.

*David is sitting at a computer working on a poem that is part of his response to the essential question, "*Who am I?*" He has an idea for the word he wants to use but can't think of it. He calls his teacher over, saying, "I know there's a word for it, the things that get in your way, but I can't think of it." Mr. Esposito asks if he has tried to insert a common word and then use the thesaurus, which David shows him he has done. Mr. Esposito says, "I think you might be thinking about the word* obstacle*. Take a quick look at MW.com and see if I'm right. If I am, remember to add it to your electronic vocabulary journal."*

David opens another browser window and looks up the word obstacle*. Realizing that this is the word he was looking for, David closes the window and opens his Google Docs page. He finds his electronic vocabulary journal and adds the word, its definition, and a reminder about the word's meaning.*

When David finishes his first draft of the poem, he file transfers it to a friend for review. As Russell reads David's poem, the two students instant message each other. Russell asks a lot of questions about the poem and makes some suggestions about word choices. David's final version of his poetic response to the essential question reads:

I am David; this is my image.

I am from extreme physical dedication
I am from confused mazes of reality
From daydreams and nightmares of hope and failure

I am Superman, creating and destroying obstacles of doom and love
I have a shield pierced only by those determined and close
I wear a mask to cloak my sly image
I dress to impress
And fit the part
Of athlete and lover
Like Tiger Woods (but a faithful version)
I use my powers to take care of others
I mentor and help
I run interference, on the court and off.
My extreme physical dedication is more than sports.
It's also about me, friends, and family.
I am David; this is my image.

The vocabulary demand on students skyrockets during the secondary school years, ballooning to an estimated 88,500 words (Nagy & Anderson, 1984). Although academic language demands are high, it is estimated that everyday speech consists of only 5,000–7,000 words (Klein, 1988). Therefore, it is unlikely that conversation and discussion alone can compensate for a limited command of the academic vocabulary. Taken together, these two figures demonstrate what most middle and high school teachers already know: The vocabulary gap for many students is so large that it is difficult to identify where to begin. In addition to vocabulary instruction, which is the focus of this chapter, it is important to recognize that students acquire word knowledge from the wide reading they do and from teacher read-alouds and shared readings, especially when teachers contextualize vocabulary in their think-alouds. We will discuss wide reading later in this chapter, and read-alouds and shared readings are discussed in Chapter 4.

The Importance of Word Knowledge

This gap in word knowledge is problematic because of its impact on content learning and reading comprehension (Fisher & Frey, 2008). Mastery of the technical language has long been recognized as a predictor of success in any field. In fact, vocabulary is one of the factors that distinguishes experts in a content area. Would you trust someone to cut your hair who did not know the names of the tools being used? In order for students to move from intermediate and generic literacy to disciplinary literacy, they need to know a lot of words (Wright & Gotwals, 2017).

Further, vocabulary knowledge impacts writing performance (Dobbs & Kearns, 2016). The more words students know and the deeper understanding they have of the words, the better they are able to write. When students use words and ideas and combine them to share information or to support an argument, they apprentice into the disciplinary thinking that teachers are looking for. Writing is also an excellent way to check students' understanding of the content. When students write, especially with technical vocabulary, their teachers can determine which ideas stuck, which are being confused, and which are errors.

In addition to its role in developing disciplinary literacy, vocabulary knowledge can also have a profound influence on reading comprehension, as evidenced in a 1992 study by Farley and Elmore. They examined the achievement of struggling first-year college students and discovered that vocabulary knowledge was a stronger predictor of reading comprehension than cognitive ability. In addition to vocabulary, comprehension is also influenced by prior knowledge, fluency, text difficulty, and interest. Unfortunately, vocabulary instruction often relies on rote memorization of definitions

followed by weekly vocabulary tests, or what we call the "assign-define-test" approach to vocabulary. As you know from your own experience, this is not an effective way for developing word knowledge. The question is, which words should be taught?

Selecting Words for Instruction

Selecting words worthy of instruction is a vexing issue for teachers and researchers. During the 20th century, lists of words, such as those in *McGuffey's Eclectic Spelling-Book* (1879), Dolch's sight words (1936), and in Thorndike and Lorge's (1944) *Teacher's Word Book of 30,000 Words,* were used to identify words that students needed to know. But our language is changing all of the time. It evolves and words change meaning, new words are added, and words are forgotten. As an example, in 2017 Merriam-Webster added 250 new words to its dictionary, including the *Internet of Things*, *ransomware*, *sriracha*, and *schneid*. Other words have changed or added meanings, such as *bunny*, a basketball term for taking an easy shot close to the basket, and *front*, which is to assume a fake personality. But you already know these words because they are in popular use. When it comes to learning content, the words students need to learn are a mix of current, technical, and historical terms. There are all kinds of words to learn, and researchers have attempted to classify words. The most common classification system has three types of words: *general, specialized*, and *technical* (e.g., Beck, McKeown, & Kucan, 2002; Vacca & Vacca, 2016).

- Tier 1, or general vocabulary, consists primarily of words used in everyday language, usually with widely agreed upon meanings. Examples of general vocabulary words include *pesky*, *bothersome*, and *vexing*. The meaning of these words tends to be consistent across contexts, and the appearance of any one of these words would signal the reader that the subject of these adjectives would be annoying. These words are fairly easy for students to learn from reading and listening to other people. In other words, we all tend to learn general vocabulary words from their context.
- Tier 2, specialized vocabulary or general academic vocabulary, is flexible and transportable across curricular disciplines—these words hold multiple meanings in different content areas. For example, the word *loom* has a common meaning— an impending event—as well as a more specialized definition in textile arts—a device for weaving thread or yarn into cloth. Think about words such as *set*, *prime*, *soil*, and *properties*. Each of them has a meaning specific to science or mathematics, and each is used more commonly. These words require explicit instruction because students use the meanings they have when they encounter a word. That means a student who knows that *prime* means best will misunderstand that prime numbers are the best numbers, rather than being able to apply the discipline-specific usage of the term.
- Tier 3, technical vocabulary or domain-specific vocabulary, are words that are specific to only one field of study. *Concerto* in music, *circumnavigation* in history, *meiosis* in science, and *abscissa* in mathematics are all examples of technical vocabulary specific to a content area. These words can be more difficult to teach because there can be little association with previously known word meanings or concepts. In addition, they tend to be "dense" in meaning; that is, the level of knowledge necessary to fully understand the word is directly related to the content itself. Technical vocabulary, in particular, tends to be vexing for secondary content teachers because the fallback system for acquisition is often rote memorization.

But this three-tier system doesn't necessarily help teachers identify words that they need to teach. And some have reorganized these into two categories: general academic and

Figure 3.1 Considerations for selecting vocabulary words

Topic	Questions to Ask
Representative	• Is the word representative of a family of words that students should know? • Is the concept represented by the word critical to understanding the text? • Is the word a label for an idea that students need to know? • Does the word represent an idea that is essential for understanding another concept?
Repeatability	• Will the word be used again in this text? If so, does the word occur often enough to be redundant? • Will the word be used again during the school year?
Transportable	• Will the word be used in group discussions? • Will the word be used in writing tasks? • Will the word be used in other content or subject areas?
Contextual Analysis	• Can students use context clues to determine the correct or intended meaning of the word without instruction?
Structural Analysis	• Can students use structural analysis to determine the correct or intended meaning of the word without instruction?
Cognitive Load	• Have I identified too many words for students to successfully integrate?

SOURCE: Fisher, D., & Frey, N. (2008). *Word wise and content rich: Five essential steps to teaching academic vocabulary*. Portsmouth, NH: Heinemann.

domain-specific. Teachers can use these classification systems to plan instruction, but it is less useful in word selection. To identify words worthy of instruction, we have identified several categories and questions that teachers can use to select vocabulary (see Figure 3.1).

Here's an explanation of each of the categories:

- *Representative.* Some words represent key ideas or concepts that students need to know to be successful in class. These words are often foundational to the discipline or content area or are used in a unique way by the content area. If the word is representative, then it probably deserves instructional attention.
- *Repeatability.* If the word is going to be used later in the unit, then it is a candidate for instruction. However, if the word is repeated frequently in the text, a technique called instructional redundancy, then it may not need to be the focus of instruction. Rather, reading the text carefully might help students develop their understanding of the word.
- *Transportable.* Some words get used a lot in other situations, including other classes or past and future units of study. If the word is better taught in a future unit, then wait to do so. If it has been previously taught, students may just need a reminder. If it's a word that crosses other content areas, some students may know the word while others do not.
- *Contextual analysis.* Just because a word is representative does not mean that it needs to be taught. If the author has provided strong context clues, such as embedded definitions or synonyms, then the word may not need to be taught. Instead, it is a candidate for teachers to model word solving in which they show students how to use the clues to figure out the meaning of the word.
- *Structural analysis.* Words with known parts, such as roots, prefixes, and suffixes may not need to be taught if the students know how to use word-solving strategies. If they do not, then the teacher can model word solving using morphology or word parts.

- *Cognitive load.* Unlike the other factors, cognitive load has less to do with the individual word and more to do with the total number of words identified. It's hard to identify the right number of words to be taught, but if students are going to know them at a deep level, there needs to be a reasonable number. Students should be able to learn two to three words per lesson per day, and some students may be able to learn more.

Here's a case in point. Clark Chang is teaching Lois Lowry's story *The Giver* (1994) about a boy facing the challenge of confronting truth in his "perfect" community. There are two words that are interesting in the first part of the book: *utopia* and *tunic*. *Utopia* is central to the understanding of a society with no illness or poverty, and students will likely need to use that word in their discussions and writing. On the other hand, the word *tunic* is a label describing the type of clothing worn by the characters. *Utopia* is well worth the instructional effort for students to think deeply about the complexities represented by this one word; *tunic* is a word that can be inferred through context clues and is not essential to comprehension.

What Does It Mean to Know a Word?

A complicating issue regarding vocabulary learning is *word schema*. This term is used to describe the complex web of knowledge of a word, including metalinguistic (inferring meaning through context), morphological (using prefixes, suffixes, and roots), and patterned (understanding the plausibility of a meaning) (Nagy & Scott, 1990). Stated another way, "knowing a word" involves more than its definition; it also means understanding the word's use in relation to the context, its permutations (*port, airport, portly*), and your ability to make accurate predictions about the meaning based on these elements. Nagy and Scott liken this to walking into an unfamiliar restaurant. It would be inefficient to begin ordering at random. Instead, you would consider the type of restaurant (fancy? truck stop?). You would expect certain constants, like being required to pay and sitting at a table. By the time you looked at the menu, even an unfamiliar item wouldn't be utterly unknown to you. Based on your schema, you would be able to hazard a pretty good guess about the item. Likewise, memorizing a single definition is likely to fall short of usefulness. To "know" a word, you must understand its context and morphology and hypothesize its meaning based on these elements.

But what does it mean to know a word? Is it to recognize, define, or use a word? Early definitions of word knowledge focused on recall and recognition. Over time, "knowing a word" was expanded to include five dimensions:

- *Generalization* through definitional knowledge
- *Application* through correct usage
- *Breadth* through recall of words
- *Precision* through understanding of examples and non-examples
- *Availability* through usage of vocabulary in discussion (Cronbach, 1942, cited in Graves, 1986).

You can appreciate the discipline-specific facet of some vocabulary, even though this research predates the field of disciplinary literacy by decades. In fact, it is your deep knowledge of a field that allows you to broaden your correct use of terminology.

Dale, O'Rourke, and Bamman (1971) believe that words do not simply fall into two categories, known and unknown. Instead, they suggested that there are degrees of knowing a word. Their continuum consists of four stages:

1. Having never seen or heard the word;
2. Having heard the word, but not knowing what it means;
3. Recognizing the word in context; and
4. Knowing and using the word.

Beck and her colleagues (2002) distinguish between shallow and deep word knowledge. By shallow word knowledge, they mean that students memorize definitions and do not have the deeper knowledge of the concepts that the words represent. Of course, the goal of content teachers is to develop students' deep knowledge of words, ensuring that students know the word and use it flexibly in a variety of diverse contexts.

SELF-ASSESSMENT OF CURRENT KNOWLEDGE. Teaching vocabulary is further complicated by the varying word knowledge levels of individual students. Even when the core reading is held in common, students bring a range of word understanding to the text. Rather than apply a "one size fits all" approach to vocabulary instruction, it is wise to assess students before the reading. This awareness is valuable for the students as well, because it highlights their understanding of what they know and what they still need to learn to comprehend the reading. One method for accomplishing this is through Vocabulary Self-Awareness (Goodman, 2001). Words are introduced at the beginning of a reading or unit, and students complete a self-assessment of their knowledge of the words (see Figure 3.2). Each vocabulary word is rated according to

Figure 3.2 Vocabulary self-awareness chart

WORD	+	√	–	EXAMPLE	DEFINITION

Procedure:

1. Examine the list of words you have written in the first column.
2. Put a "+" next to each word you know well, and give an accurate example and definition of the word.Your definition and example must relate to the unit of study.
3. Place a "√" next to any words for which you can write only a definition or an example, but not both.
4. Put a "–" next to words that are new to you.

This chart will be used throughout the unit. By the end of the unit you should have the entire chart completed. Because you will be revising this chart, write in pencil.

SOURCE: From "A Tool for Learning: Vocabulary Self-Awareness," by L. Goodman, in *Creative Vocabulary: Strategies for Teaching Vocabulary in Grades K–12* (p. 46), by C. Blanchfield (Ed.), 2001, Fresno, CA: San Joaquin Valley Writing Project. Used with permission.

Figure 3.3 Vocabulary self-awareness example

Word	+	√	–	Example	Definition
prejudice	+			Not hiring a person because of their color, religion, or gender is a form of prejudice	A bias, usually not based in fact, against a person or group
civil disobedience		√		Disobeying a law	
transcendentalism			–		

SOURCE: Fisher, Douglas. Frey, Nancy (2018) Improving Adolescent Literacy: Content Area Strategies at Work, 5e. Pearson Education.

the student's understanding, including an example and a definition. If they are very comfortable with the word, students give themselves a "+" (plus sign). If they think they know, but are unsure, students note the word with a "√" (check mark). If the word is new to them, they place a "–" (minus sign) next to the word. Over the course of the reading or unit, students add new information to the chart. The goal is to replace all the check marks and minus signs with a plus sign. Because students continually revisit their vocabulary charts to revise their entries, they have multiple opportunities to practice and extend their growing understanding of the terms. An excerpt of one student's vocabulary chart for *Civil Disobedience* (Thoreau, 1849/1965) can be found in Figure 3.3.

Vocabulary Instruction

It was a long-held tradition in secondary schooling that explicit vocabulary instruction is an essential prereading activity to support students' subsequent comprehension (Moore, Readence, & Rickelman, 1989). However, many teachers have experienced the dilemma of preteaching the vocabulary such that the student has little opportunity to apply their learning, relying instead on rote memorization at the expense of deeper understanding (Fisher & Frey, 2012). When teachers preteach vocabulary, students fail to develop their word-solving skills. Further, students often forget the meaning of the words that have been pretaught because they do not see them as relevant, and teachers end up teaching vocabulary throughout the lesson anyway. Students need vocabulary instruction that is integrated into their content area learning, not commercials that come before the "real" learning. The strategies in this chapter can be used across content areas, and they all demonstrate the ways in which teachers can integrate word learning into content learning. Blachowicz and Fisher (2000) identified four principles for effective vocabulary instruction. They advise that students should

- be actively involved in word learning,
- make personal connections,
- be immersed in vocabulary, and
- consolidate meaning through multiple information sources.

The authors note that whereas these principles apply to all learning, their experience has shown that these conditions are vital for vocabulary acquisition and retention. The boxed feature on the next page includes a number of tech tools that can help build students' word knowledge. Let's look inside classrooms to see how teachers address vocabulary teaching and learning across the curriculum.

Tech Tools for Vocabulary Growth

1. **Power Vocab Word Game.** Those looking for a fun way to improve vocabulary will love this app! It is simply fun to play and even offers a multiplayer mode where you can test your vocabulary skills against someone else's. Teachers and parents will love it because of its test preparation tools.
2. **SAT Vocab – Mindsnacks.** This vocabulary app includes nine games to help students dominate the SAT with lessons, quests, and additional SAT preparation features (i.e., antonyms). The games are fun, but the app is also a great vocabulary-building tool because it includes definitions, pronunciations, and contextual examples.
3. **Shahi – A Visual Dictionary.** This unique vocabulary tool is an online visual dictionary. This online tool provides students with both the definition of the word and a corresponding image from Flickr.
4. **uVocab Vocabulary Trainer.** For those preparing for the SAT or other standardized tests, this vocabulary app is a smart choice because it includes over 4500 test words and realistic test questions. Students can also keep track of their progress.
5. **Word Hippo.** This online educational tool is helpful in the classroom because it provides a little bit of everything – definitions, pronunciations, synonyms, antonyms, rhyming words, and more. It also gives examples of the word in different contexts.

Source: http://www.theedadvocate.org/8-must-vocabulary-apps-tools/

Strategies at Work

Vocabulary Instruction in English

DEVELOPING FAMILIARITY THROUGH WORD WALLS. Word walls (Harmon, Wood, Hedrick, Vintinner, & Willeford, 2009) are alphabetically arranged (by first letter) high-frequency words displayed in a manner that allows easy visual access to all students in the room. However, it is essential to "do" a word wall, not merely display one. For example, during a study of *The Grapes of Wrath* (Steinbeck, 1939), Claudia Van Zant included words like *Dust Bowl, Okies, drought, migrant, flare, fray, sluggish, cunning, pierce, bemused, subtle, significant, strive, spares,* and *snub* on the word wall. Ms. Van Zant teaches the word wall each day through brief (10 minutes or so) interactions around a particular set of words. One day, she might model writing using the word wall. Another day, she might play games such as Guess the Covered Word (Cunningham & Allington, 2003), where a word is revealed one letter at a time and students name the word. Still other days, she asks students to talk about a selected word with a peer and to note how it is used in the text they are reading. It is important that the words, once taught, remain in the same spot so students can reliably locate them. This is very important for struggling readers because vocabulary is often a barrier to their learning in content area classes. Regular practice with the words in a discipline helps students who struggle.

Word walls are especially useful for students who are not yet achieving at expected reading levels because the walls provide for repeated instruction and practice with a key aspect of literacy: vocabulary—and because students begin to rely on the wall for retrieving knowledge. For many students, the word wall provides a comfort or bit of security as they struggle through texts that they find complex. When teachers teach words from a wall, they are saying to all students, "There are still a lot of words to learn and we don't all know them already." Students appreciate this message because they often feel that they should already be able to read and understand the texts their teachers use in class.

MODELING WORD SOLVING USING WORD ANALYSIS. The ability to deconstruct words to ascertain meaning is directly related to a student's knowledge of root words and affixes. Root words are morphemes (units of meaning) that compose the foundation of all words. Affixes (prefixes and suffixes) are attached to the root word in order to modify the meaning. For example, the word *dictionary* comes from the Latin *dictum* meaning "to speak." Other root words are derived from Greek words, such as *phonogram* from *phono* meaning "sound." Still other root words are free morphemes, meaning that they can stand alone as a word. For example, *port, form*, and *act* are im**port**ant common root words that also serve as a plat**form** for **act**ivating word knowledge through the addition of a variety of affixes. By closely investigating the parts of a word, including root words, derivations, and affixes, students can acquire tools for use with unfamiliar words, thus expanding their general and specialized vocabularies. Imagine how useful this is for English learners. Learning to analyze words builds their vocabulary banks as well as a habit for learning new words.

Word study often begins with free morphemes like *port* because their meaning is generally accessible. After discussing the meaning of *port* as a Latin word for "carry" and the common definition of the word as "a place where ships can safely dock," word extensions become more apparent. *Porter* means a person who carries an object; *airport* means a place for airplanes, and *import* means to carry something into an area.

In addition to root word analysis, instruction about prefixes and suffixes should also occur regularly. Understanding of the morphological basis of affixes is critical to word knowledge. Cunningham (2002) estimates that "re-, dis-, un-, and in-/im- account for over half of all the prefixes readers will ever see . . . [and] -s/-es, -ed, and -ing account for 65% of all words with suffixes" (p. 4). Coupled with root word and derivational knowledge, students who understand common affixes possess a powerful set of skills for taking words apart and reassembling them to extract their meaning. This level of word analysis also appears to support reading because learners who can extract the morphological characteristics of the word will process and analyze across morphemes rather than syllables.

As we will see in the chapter on read-alouds and shared readings (Chapter 4), one of the most effective ways to develop students' word analysis skills is through modeling. When teachers come to a word appropriate for this type of analysis, they pause and think aloud, showing students how they used the word parts to determine a word's meaning. For example, when reading a sentence with the word *malodorous*, the teacher might say "I know that the prefix *mal-* is bad and that *odor* has to do with smell. And I know that the suffix *–ous* means full of or having the characteristic of. So, putting it together, *malodorous* is being full of bad smells."

SHADES OF MEANING CHARTS. Relationships between words can be particularly challenging when discussing synonyms. The difference between *annoyance* and *harassment* is a fine but distinct one. The ability to discern between these gradients of meaning is a skill tested on the Scholastic Aptitude Test and other college board exams. Truly the difference between the right word and the almost right word can impact the ability of the student to use precise language. These "shades of meaning" can be taught in an imaginative way using paint chip cards from the local hardware store (Blanchfield, 2001). Students attach a paint chip card containing shades of color to notebook paper to illustrate a string of synonyms. Definitions are written to the right of the paint chip card on which the word has been written. For example, Bridget (a student who struggles with reading) created the card in Figure 3.4 to illustrate synonyms for the word *fear*.

Figure 3.4 Shades of meaning

SHADES OF MEANING	DEFINITIONS AND SENTENCES
fear	a feeling of anxiety because danger is nearby I have a fear of getting a shot at the doctor.
dread	a great fear mixed with awe or respect The girl dreaded moving to a new school.
terror	an intense fear and shock I saw terror in the driver's eyes right before he crashed.
panic	a sudden fear that might cause the person to collapse My mother panicked when she saw the cut on my face.
phobia	a fear that doesn't make sense My friend has a phobia about roller coasters.

SOURCE: Fisher, Douglas. Frey, Nancy (2018) Improving Adolescent Literacy: Content Area Strategies at Work, 5e. Pearson Education.

Vocabulary in Social Studies

SEMANTIC FEATURE ANALYSIS. A popular instructional strategy for categorizing terms by characteristics is semantic feature analysis (Anders & Bos, 1986). This procedure, also known as SFA, assists students in assigning characteristics, or features, in a grid pattern. Vocabulary terms comprise the rows, and the features make up the columns. Students place a "+" in each cell to indicate a relationship between the term and the feature, and a "–" when it is not a characteristic. Typically, students complete the grid in conjunction with a piece of assigned text. During a U.S. history class, students analyzed terms related to post–World War II U.S. foreign policy. The teacher created the grid in Figure 3.5 for students as they worked through a chapter in their textbook. Students who struggle with reading find this particularly useful as they begin to see the relationships between and among ideas.

Many teachers attribute the power of SFA to its visual arrangement, particularly because it mimics the way the brain organizes information (Pittleman, Heimlich, Berglund, & French, 1991). Marco, a student in a classroom using SFA, seemed to confirm this observation when he said, "*Now* I get it! You can really see how these policies didn't all really help each other. No wonder it was so messed up."

Semantic feature analysis is an excellent example of a vocabulary strategy that taps into a student's visual learning modality. The use of multiple modalities of learning has been shown to support new learning (Armstrong, 2017). These modalities, or forms of expression, are frequently categorized as visual, auditory, and kinesthetic (movement). Whereas conventional wisdom cautions against attempting to categorize students according to a particular learning style (e.g., Hattie, 2012), educators widely recognize the value of integrating these forms of expression into instruction. Certainly visual supports are widely used. As well, the auditory modality is represented in Chapter 5, which focuses on questioning. However, learning through and with movement is often seen as problematic, especially at the secondary level (Gage, 1995). It can be a challenge for the teacher to manage this type of expression in a busy classroom.

Figure 3.5 Semantic feature analysis example

VOCABULARY WORD / FEATURE	PEACEKEEPING EFFORT	BUILT ALLIANCES WITH EUROPE	AFFECTED BY DOMESTIC POLICY	ESCALATED COLD WAR
Joined United Nations (1945)	+	+	+	–
Berlin Blockade (1948)	–	+	+	+
Declaration of Human Rights (1948)	+	+	+	–
Signed NATO (1949) and SEATO (1954) treaties	+	+	+	+
Mutually Assured Destruction (MAD) policy (1960)	+	+	+	–
U.S. tests hydrogen bomb (1952)	–	–	+	+
Joined World Bank (1947)	+	+	+	–
Bay of Pigs invasion (1961)	–	–	+	+
Cuban Missile Crisis (1962)	–	+	+	+

SOURCE: Fisher, Douglas. Frey, Nancy (2018) Improving Adolescent Literacy: Content Area Strategies at Work, 5e. Pearson Education.

VOCABULARY ROLE-PLAY. An example of kinesthetic expression in vocabulary instruction is role-playing. This practice of "acting out" vocabulary extends from Total Physical Response, a method of language instruction used with students who are English language learners (Asher, 1969) and those who are deaf (Marlatt, 1995). When students are invited to act out vocabulary, they engage in physical movement and gestures to portray a word. It is likely that these movements assist the performer in remembering the word because he or she is required to think critically about the features of the word.

The incorporation of role-playing in social studies content has also been documented (Hillis & von Eschenbach, 1996). Marisol Acuna used vocabulary role-play in her social studies class during a unit on health care decisions. The focus of the lesson was on the dangers associated with tobacco products. She identified relevant vocabulary and then invited students to study the words in an unconventional way—through drama. Students worked in small groups to research specialized vocabulary words and phrases like *advertisement, big tobacco company*, and *exposure*. After discussion and clarification about word meanings, each group then crafted a script using the identified vocabulary words. A requirement of the skit was that it must accurately convey the significance of the word or phrase.

Corita, Scott, and Kyle selected *tobacco subsidies* as one of the terms to demonstrate during vocabulary role-play. Scott, as the tobacco farmer, tells his wife (Corita) that he'd like to replace his tobacco fields with spinach in order to contribute to the health of the nation. The two farmers then turn to Kyle, the farm management agent, to explain their decision. "We want to plant a new crop," explains Corita. Kyle, as the agent, replies, "You can plant what you want, but you'll lose your *tobacco subsidy* from the government." "You mean I won't get a check for each acre of tobacco I harvest? How can I afford to keep my farm?" says Scott. This triad of students, one of whom has a disability,